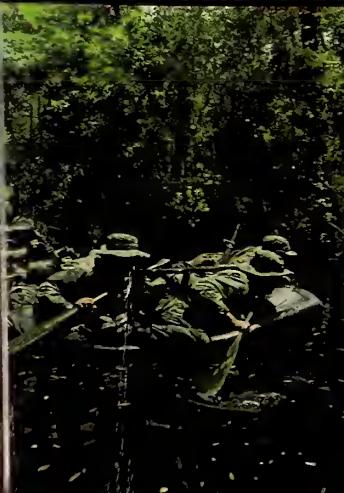


# MARINE CORPS 1987 CONCEPTS AND ISSUES







3 February 1987

To the Reader:

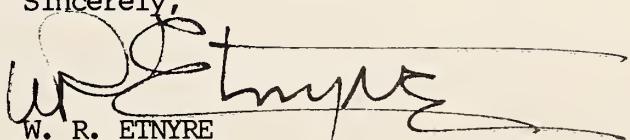
Concepts and Issues is published annually to describe the current "state of the Corps" to audiences internal and external to the Marine Corps. New in this year's publication is the information previously contained in the Marine Corps Resources and Forces Summary. With the inclusion of the data from that booklet, Concepts and Issues now provides both a detailed backup document to support the Commandant's Posture Statement and a single source summary of the substance of the Marine Corps Program Objective Memorandum (POM).

Concepts and Issues is not all inclusive. Program sponsors have identified only key programs for inclusion, and some programs from previous editions have been deleted (see Appendix C). Program quantity and cost displays reflect POM 88/89-92 as updated by the FY 88/89 President's Budget data. Because the Planning, Programming and Budgeting System is a dynamic, continuous process, those programs--and their attendant displays--are always subject to change.

The Marine Corps POM proceeds from the requirement to man, train, and equip Fleet Marine Forces consistent with fiscal realities. Focusing on sound leadership and a dedication to readiness and flexibility, we remain committed to supporting our national strategy with the most cost-effective combat organization possible. I hope Concepts and Issues contributes to the reader's understanding of our efforts to achieve this objective.

Concepts and Issues does not express official Marine Corps policy on doctrinal matters; however, it does address geopolitical realities and various other factors that influence our structure, requirements and capabilities. Comments and suggestions for future editions are welcome.

Sincerely,



W. R. ETNYRE

Major General, U.S. Marine Corps  
Deputy Chief of Staff for Requirements and Programs



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## CHAPTER I

### THE MARINE CORPS' CONTRIBUTION TO NATIONAL SECURITY

#### Introduction

This chapter relates national security requirements and strategy to the employment of Marine forces. It begins with a review of issues affecting our national strategy, narrows to a brief explanation of the Maritime Strategy and provides examples of how the Marine Corps, in concert with the Navy, offers significant options to our country in every potential contingency. Finally, the section titled "The Marine Corps Today" outlines the current posture of the Corps and summarizes how the Marines' assessment of present capabilities are translated into aggressive modernization efforts.

#### National Requirements

Challenges to the security of the United States are global. They result from long-standing political commitments, economic realities and the potential threats to peace posed by the Soviet Union acting directly or through surrogates. Since we do not have unlimited means, we have adopted a national military strategy which emphasizes deterrence. If deterrence fails, we will defend as far forward as possible in a global coalition posture. By implication, we accept the requirement for a credible force projection capability since the means to project military power are key to the initial deterrence of aggression and to the conduct of a successful forward defense should deterrence fail.

The precepts of U.S. military strategy--deterrence and forward defense--place a premium on rapid deployability. They require that we have sufficient amounts of airlift, sealift and prepositioned materiel overseas to maintain a credible deterrent while minimizing our presence in allied nations. They also require that we be able to move major combat forces rapidly to endangered areas and to support them for as long as they are needed. As the scope of our security interests has grown and the threat of regional conflicts has increased, so too has the range of demands on our projection forces. The Navy/Marine Corps team fulfills this demand for credible force projection.

The proximity of Soviet forces to our allies and interests imposes severe demands on the timeliness of a military response. Consequently, our strategy for defense stresses a reliance on forward deployments to areas such as Europe, Northeast Asia and Southwest Asia. These forward deployed forces assist in deterring aggression by providing visible and convincing evidence of support; and they increase our ability to respond effectively and in a timely manner. They also discourage regional conflicts and provide a stable environment for diplomacy.

The Department of the Navy (DON), with direction from the National Command Authorities (NCA), has developed a program which will achieve maritime power, deter aggression and successfully advance our nation's foreign policy objectives. This program is based on a Maritime Strategy that accepts the geographic and economic realities which have molded our nation's growth and development, and which will continue to affect the attainment of national goals.

The Maritime Strategy is a broad statement of governing principles and naval objectives that will enable us to achieve the goals mandated by our global national interests. The strategy has evolved into concepts for the global employment of naval forces to attain naval objectives. Most importantly, the Maritime Strategy is firmly rooted in specific geographic theaters and keyed to specific threat capabilities.

In conclusion, there are no comforting trends in either the international arena or in Soviet capabilities. Soviet actions do not justify optimistic assumptions about their intentions; and our interests remain threatened by terrorism, the proliferation of arms, low intensity conflicts and political and economic instabilities. These conditions threaten us directly and provide opportunities for exploitation by our major antagonists. Hence, the demands upon our military capabilities are unlikely to diminish, and our national military strategy with its proper emphasis on deterrence, will continue to be tested. That strategy will continue to rely upon the global reach, rapid responsiveness and integrated combat power that are unique to maritime forces.

### Maritime Strategy

The Maritime Strategy is based on the national military strategy as reflected in pertinent policy and strategic documents. It is centered upon an aggressive forward naval presence. The general goals of this strategy can be summarized as follows:

- Deter war if at all possible
- If deterrence fails:
  - destroy enemy maritime forces
  - protect allied sea lines of communications (SLOC)
  - support the land campaign
  - secure favorable leverage for war termination

If deterrence fails, the primary national objective will be to limit the expansion of the conflict. However, if that effort is unsuccessful, consideration must be given to affecting the scope and duration of the war. Maritime superiority will enable our alliances to limit Soviet advantages and allow for the attack of Soviet assets in areas where they would prefer not to fight. Translated into a specific North Atlantic Treaty Organization (NATO) scenario, this strategy would enable NATO forces to secure the Atlantic SLOC to Europe, defeat Soviet attacks on the northern flank and, if need be, carry the fight to Soviet operating areas to seek the best possible leverage for war termination.

The Maritime Strategy prescribes a well-coordinated, sequential concept of global operations that capitalizes on alliance strong points and exploits known Soviet weaknesses. It is complementary to the coalition defense of Western Europe and enhances the efforts of other conventional forces.

The Maritime Strategy itself is broken into three phases:

- Deterrence/Transition to war
- Seize the initiative
- Carry the fight to the enemy

In the first phase, both sides would seek to limit the confrontation while posturing for an advantageous position if that effort failed. The Soviets would likely disperse their military assets to limit their initial vulnerability and to seize key pieces of terrain or vital littorals. To that end, their surface and submarine forces would deploy to their assigned wartime operating areas.

On a parallel track, naval forces would begin a forward movement as well. Our own submarine and surface action groups would move from their home-ports toward operating areas. Marine Air-Ground Task Forces (MAGTFs) would either embark as landing forces on amphibious task force ships and/or be airlanded to marry up with prepositioned stocks and equipment. During this phase, we would aim to increase readiness, to optimize the deployment of forces, to maximize available warning time, and to cede no vital area by default; e.g., the Norwegian Sea, the Strait of Hormuz, or the Mediterranean Sea.

Should actual hostilities begin between NATO and the Warsaw Pact, then the strategy would be to counter the attack, attrite enemy forces and seize the initiative. Protection of the Atlantic SLOC would be undertaken as far forward as possible so as to allow the reinforcement of central Europe. Taking full advantage of the U.S. edge in antisubmarine warfare (ASW) technology, the destruction of the Soviet submarine fleet would be a primary objective; and ASW operations would be conducted as far forward as possible.

Although this second phase does not envision using the massed combat power of carrier battle groups (CVBGs) and amphibious task forces to strike the Soviets far forward, operations in support of the main battle are not discounted. The opportunity for amphibious forces to strike behind Soviet lines at points of opportunity would be carefully considered and exploited.

The last phase of the Maritime Strategy seeks to build on the successes of preceding phases, so that war termination can be achieved on terms favorable to the U.S. and its allies. Attacks of massed naval forces on the flanks could now be undertaken in the face of a weakened Soviet force. Our amphibious forces would press home the initiative and carry the fight to the enemy, destroying his forces, regaining territory and supporting the main theater land campaign.

To achieve its general objectives, the Maritime Strategy must be supported by global, forward deployed forces that are superior to likely opponents: global because our interests and allies are global; forward deployed because deterrence of our opponents and support of our allies requires we be where those enemies and interests are; and superior because if deterrence fails, we intend to win.



### Amphibious Forces' Contributions to the Maritime Strategy

The Maritime Strategy recognizes that the most technologically advanced weapons systems, manned by the most professional and well-led personnel, will not produce victory unless they are employed within a strategic and tactical framework that maximizes their potential. This concept is the essence of strategy. To anticipate when, and in what situation, the nation's armed forces may be employed next is fundamental. In addition, we must develop force structures, and fit weapons and tactics to the task.

In concert with strategists and planners in the Navy, the Marine Corps has evaluated the uses of amphibious forces across the spectrum of conflict from peacetime presence, through crisis response, and ultimately to strategic nuclear confrontation. This has led to the development of an Amphibious Strategy that is a component of, and completely complementary to, the Maritime Strategy. Not only will this strategy provide the basis for future program development, it will engender increased understanding and provide a baseline reference for ongoing cooperative planning efforts.

The Navy/Marine Corps team demonstrates its flexibility in support of national objectives in many ways. For example this team can:

- Assist diplomatic efforts through peaceful projection of influence and, during periods of crisis, provide a selective show of force and interest.
- Assist with early commitment of U.S. forces to combat when required by controlling airfield and port facilities.
- Assist allies through provision of flexible and selective levels of military assistance.
- Provide humanitarian assistance and disaster relief.

- Protect and evacuate noncombatants and installations.
- Project military power ashore through amphibious assaults against defended objectives.
- Occupy and defend geographically strategic choke points.

Although some critics have overlooked the advantages offered by naval forces, this country derives significant benefits from its employment of maritime-based forces. Principal among these is the contribution of naval forces towards regional stability throughout the world. The fleets with their Fleet Marine Forces (FMFs) constitute this nation's primary military force for response to distant crises. The Navy/Marine Corps team is a mobile force with the means to exercise sea control, to provide offshore presence, and to execute power projection and influence. Ready amphibious forces equipped with helicopters, air-cushion landing craft, and amphibious vehicles are not dependent on air facilities, ports, and land bases (with their attendant logistical and political complications). They choose their point of landing to avoid concentrations of hostile forces; and they employ precisely the right size and mix of forces required to accomplish the mission assigned. Indeed, these specially trained and equipped Marine forces embarked in amphibious shipping represent the ultimate in mobility, flexibility, and readiness.

The history of the past 38 years supports this assertion. In the approximately 250 crises to which the U.S. responded by deploying forces, naval forces have been used in over 200 of these events--and amphibious forces in 80% of those instances. It is fair then to assume that the nation will continue to look to the Marine Corps for its time-tested expeditionary capabilities and readiness. It is the traditional role and the charter of the Corps. This high incidence of involvement results directly from the Marine Corps' ready, flexible and mobile character. Our economy and international political position today are increasingly dependent on the existence of these naval forces.

The key advantages of maritime forces are their flexibility, staying power, and credibility. Whether small and unobtrusive or large and visible, naval forces stand as a clear manifestation of national will. They provide a signal and display our interests and a willingness to defend them if warranted. Unlike garrison forces, maritime elements can express U.S. resolve without impinging upon the sovereignty or political sensitivities of a region. In addition, these forces can operate without basing or airspace overflight rights, while remaining under discreet but direct political control. Unlike air-transported or prepositioned elements, Marines embarked aboard amphibious shipping provide this nation's sole forcible entry capability against defended beachheads.

Maritime forces remain prepared to signal our resolve and provide a credible deterrent that is well understood by our friends and foes alike; for superior naval forces, employed within the framework of a global maritime strategy, are the single most critical requirement for the attainment of our national objectives. Balanced naval forces provide the basic tools necessary to assert and defend our interests: they protect our sea lanes and, if need be, project sizable forces ashore in local or global scenarios. In our national arsenal, these formidable capabilities are unique to the Navy/Marine Corps team.

## Mission, Functions and Organization of the Corps

The Marine Corps is unique among the four services because the National Security Act of 1947, as amended, provides that the Marine Corps will consist of and shall provide, in part, for these key defense elements:

- Three combat divisions, air wings and such other land combat, aviation, and other services to ... organized, trained and equipped to provide Fleet Marine Forces of combined arms ... for service with the fleet.
- Detachments and organizations for service on armed vessels of the Navy.
- Security detachments for the protection of naval property at naval stations and bases.
- Marine officer and enlisted personnel in support of the Department of State security program overseas.
- Marines to perform such other duties as the President may direct.

This Act also requires that the Marine Corps provide rapidly deployable forces for contingency missions in support of the national strategy. The requirement to deploy forces rapidly has resulted in active and reserve components that provide a balance between strategic mobility and tactical capability.

Marine Corps doctrine provides that FMFs will be employed as integrated MAGTFs. The MAGTFs are tailored to accomplish specific missions. The capability in this tailored force is designed to exploit the combat power inherent in closely integrated air and ground operations. Regardless of the size of the MAGTF, it will include four major components:

- Command Element (CE)
- Ground Combat Element (GCE)
- Aviation Combat Element (ACE)
- Combat Service Support Element (CSSE) (including Navy Support Element [NSE])

Within this general structure, there are three basic types of MAGTFs that may be formed in response to operational requirements:

- Marine Amphibious Unit (MAU). The MAU is the smallest air-ground task force (1,800-4,000 Marines and Sailors) and is normally built around a reinforced infantry battalion and a reinforced helicopter squadron. It is commanded by a colonel and employed to fulfill routine forward afloat deployment requirements. The MAU provides an immediate reaction capability for relatively limited combat operations. Because of its limited sea-based sustainability, the MAU will not routinely conduct amphibious assaults, but may be considered the forward element of a larger MAGTF. MAUs are now continuously deployed in the Mediterranean, Western Pacific, and periodically in the Atlantic and Indian Oceans as well as the Caribbean Sea.

- Marine Amphibious Brigade (MAB). The MAB, with 8,000-18,000 Marines and Sailors, is normally built around a reinforced infantry regiment and a composite Marine aircraft group. It is commanded by a brigadier general and is capable of amphibious assaults and subsequent operations ashore. During potential crisis situations, a MAB may be forward deployed afloat for an extended period to provide rapid response. With 30 days of sustainability, the MAB may be supported from its sea base, facilities ashore or a combination of both.
- Marine Amphibious Force (MAF). A MAF is the largest (50,000 plus Marines and Sailors) and most powerful of the MAGTFs and is normally built around a division/wing/combat service support team. However, it may range in size from less than one to several divisions and aircraft wings, together with an appropriate combat service support organization. The MAF is commanded by either a major general or a lieutenant general depending on its size and mission. It is capable of conducting a wide range of amphibious assault operations and, with its 60 days of support, sustained operations ashore. The MAF can be tailored for a wide variety of combat missions in any geographic environment.

The Marine Corps' ability to organize for combat rests on the unique structure of its operating forces, the foundation of which is the FMF. The FMFs are integral parts of the fleets or naval forces to which assigned. They have the status of a fleet "type command" and are subject to the operational control of the Atlantic and Pacific fleet commanders, except for individual and unit training and administrative control, which is retained by the Commandant of the Marine Corps (CMC).

The MAGTFs, the cutting edge of our operating forces, represent potent, combined-arms teams. They are sized and organized to be totally mission capable while adhering to the recognized principles of war. In keeping with the Marine Corps' fundamental mission of amphibious operations, MAGTFs are the landing forces for the fleets. More detailed information on Marine tactical organizations is presented in Appendix A.

### Prepositioning

The requirement for the rapid movement of credible forces to distant locations had been a limiting factor in crisis response for many years. In response to this requirement a new dimension to the Marine Corps response posture has been developed. The Maritime Prepositioning Ships (MPS) program is one of the most innovative strategic initiatives of this era. It provides for the rapid commitment of highly capable MAGTFs to crisis areas and combines the best features of our airlift and sealift capabilities. In so doing, it adds a new element to the Maritime Strategy. This contingency response program is one of the most significant developments in recent Marine Corps history. It substantially increases mobility, sustainability and flexibility in the projection of naval power.

In essence, MPS calls for three squadrons of four or five ships loaded with combat equipment, vehicles and supplies to be forward deployed at a designated port or ports and/or deployed at sea. When ordered, Marines comprising a MAB are airlifted to the objective area for linkup with the MPS squadron and

embarked combat equipment/supplies. Simultaneously, the brigade's tactical aircraft deploy to a nearby airfield. This brigade, with up to 16,500 Marines and Sailors, can be combat capable and ready to move to designated objectives within 10 days of the arrival of the MPS squadron in the expeditionary area. This preemptive deployment of MPS provides both responsiveness and flexibility for contingency response.



As a result of the establishment of the MPS program, the Marine Corps' capabilities have been significantly enhanced. MPS has added a truly new dimension to our projection of force. MPS squadrons can steam to many of the most critical contingency areas within 7 days. Once ashore, a MAGTF packs the punch and tactical mobility to quickly strike against assigned objectives. This integrated, combined-arms team is already trained and organized as a ready "force package." The MAGTF arrives with 30 days of sustainability so that no strategic lift is required to provide sustainability during the first 30 days ashore.

Our nation is dependent upon the seas to provide us with both the natural resources vital to our economy and the lines of communications to our allies. The national leadership has endorsed and strenuously supported programs calling

for maritime strength which will ensure a decisive degree of superiority at strategic choke points throughout the world. Maritime prepositioning operations are a new element in the Maritime Strategy. MPS is now a reality that provides a new flexibility in the arsenal of options available to the NCA.

Another strategic mobility enhancement is prepositioning of selected Marine combat equipment and supplies on land in Norway. This DOD-directed program is the Marine Corps' only land prepositioning project and is based upon a bilateral agreement signed by the U.S. and Norway in January 1981.

The program involves the prepositioning of selected combat equipment and 30 days of supply. Included are low maintenance, high consumption ground munitions, subsistence items, selected principal end items (PEIs), construction and barrier materiel, selected medical supplies and repair parts.

This program will reduce our response time to the critical northern flank of NATO from weeks to days. The Norway force is a MAGTF unit, specifically tailored for this contingency in a cold weather environment. It is a versatile, formidable force of approximately 13,000 Marines and Sailors and over 150 aircraft. Since each MAGTF is task organized to accomplish the mission assigned, the Norway MAGTF meets the unique requirements of the Norway mission, and, consequently, is different from the previously mentioned MPS squadron MATGF. The Norway prepositioning program has been designed to provide rapid deployment to a vital area and ally. The program sends a clear signal of U.S. commitment without any requirement to post a single Marine on Norwegian soil.

In short, prepositioning provides the following:

- Rapid global response using minimal strategic lift
- Superior combat power
- Sustainability

The ability to combine forward-deployed forces, rapidly-deployable air-lift-configured MAGTFs using prepositioned combat equipment and supplies, and amphibious MAGTFs is a crisis response capability that is uniquely Marine.

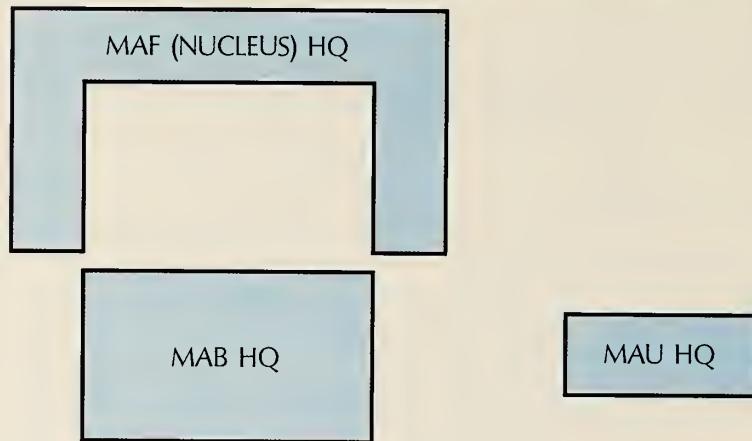
#### Deployment Issues

In order to respond quickly to crises, the Marine Corps must be able to rapidly expand its combat power in a threatened area by building upon forward deployed forces to form larger MAGTFs. This challenge requires both the traditional readiness of our ground combat, aviation combat and combat service support forces and a new level of command element responsiveness. It also requires that we develop a framework for forming and employing larger MAGTFs from smaller MAGTFs because we intend to employ our forces as MAFs even though amphibious lift limitations may force us to initially deploy as MABs.

As a first step towards achieving this capability, the Marine Corps has established permanent, standardized headquarters for its MAGTFs. Included in this program are thirteen headquarters: four MAU, six MAB, and three MAF (nucleus). Implementation of this plan, which began in July 1983, will

be completed in 1990. This "building block" relationship between the MAF, which is only a nucleus headquarters in peacetime, and the MAB headquarters, which is manned as a fully operational headquarters at all times, is displayed in figure I-1:

Figure I-1: Permanent MAGTF Headquarters Concept



This means that the MAF (nucleus) headquarters can concentrate on planning MAF-size operations and training to be the core of a fully operational MAF headquarters while the MAB headquarters can focus on preparing for rapid deployment, either independently or as part of a MAF, and conducting exercises. This relationship eliminates the requirement for full-time operational MAF headquarters. MAU headquarters, meanwhile, are separate entities which, like the MAB headquarters, are fully manned and operational in peacetime. Unlike the MAB headquarters, however, they have no "building block" relationship to any MAB or MAF headquarters and are primarily tasked with preparing for and conducting MAU forward deployments.

The second step toward achieving the capability to rapidly form and employ larger MAGTFs from smaller ones involves the creation of "composite MAGTFs" by combining the forces of two or more other MAGTFs. The term recognizes that in an expeditionary situation we must be prepared to transition separately deploying smaller MAGTFs into a larger, composite MAGTF.

Composite MAGTFs may be composed of any combination of forward deployed or mission deployed amphibious forces as well as land and maritime prepositioning forces. The specific combination used will depend upon a number of factors including the time, distance and strategic mobility resources available.

Our emerging framework for forming composite MAGTFs does not prescribe textbook solutions, but rather emphasizes the flexibility of the MAGTF structure. By using all forces available (to include forward deployed MAUs, MPS forces, augmentation forces and headquarters "building blocks"), the MAGTF commander can tailor his force to efficiently and effectively complete his assigned mission.

The permanent MAGTF headquarters concept and the composite MAGTF concept are compatible innovations designed to increase our operational capability to rapidly deploy and employ forces. Together, they provide a responsive means for maintaining effective command and control as we deploy, and subsequently employ, our most available warfighting organizations to the crisis at hand.

### The Marine Corps Today

Our combat readiness has never been better. The Corps is trained and equipped for the most demanding of assignments--from countering state-sponsored terrorism, to responding to low intensity conflicts, to meeting high intensity, large scale, global commitments. With the continued support of the national leadership, the Marine Corps will maintain and hone this readiness and our unique capability to respond to national security needs across the entire spectrum of conflict. The presence of amphibious forces, either routinely deployed or in response to a crisis, provides visible, measured support to deter or prevent escalation of the crisis. Should subsequent force be required, Marines are prepared to rapidly provide the response directed.

Measured in terms of structure, training, equipment, mobility, readiness, sustainability and the attitude of the individual Marine, the Corps provides the national defense with its most capable and flexible resource.

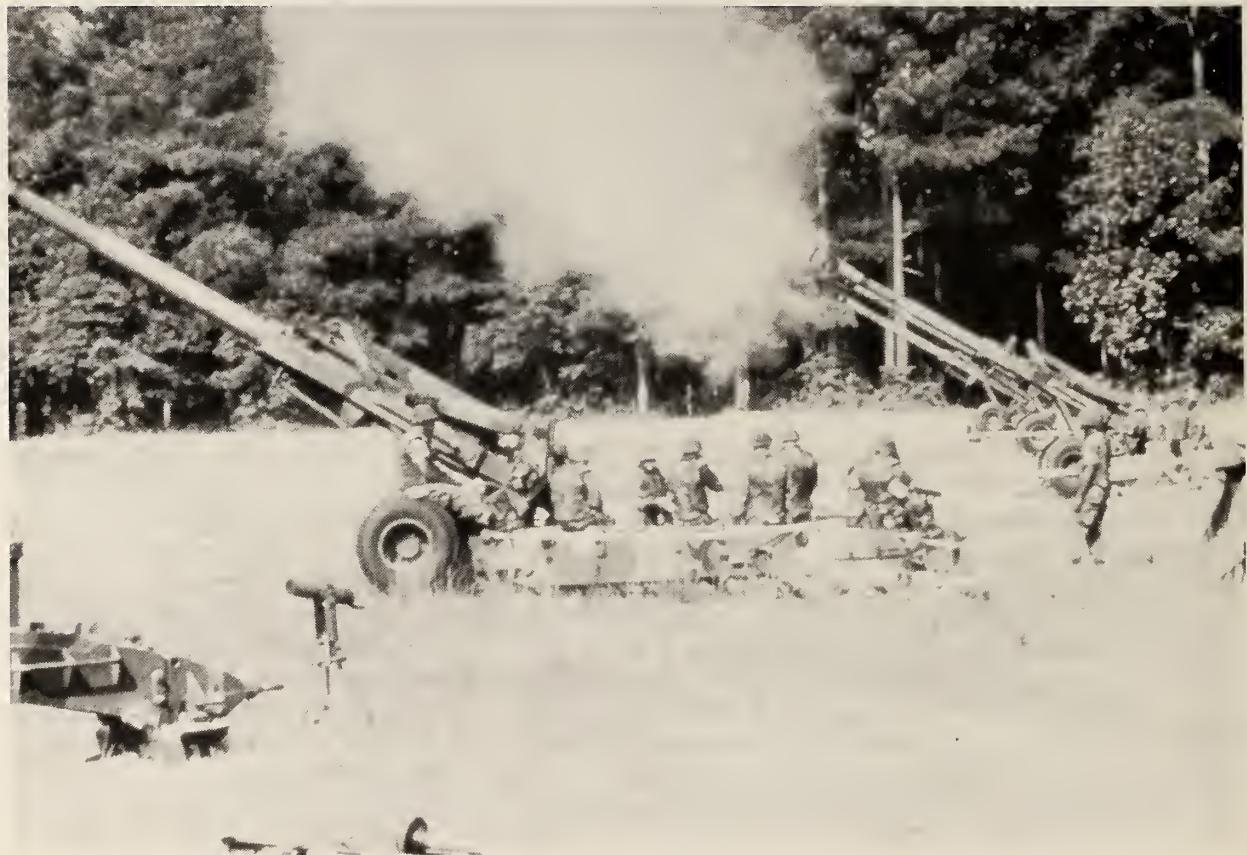
Our infantry battalions continue to be enhanced with new and improved weapons to increase their organic firepower. New acquisitions include the M249 squad automatic weapon (SAW), the MK-19 40mm grenade launcher, and the M252 81mm mortar.

The Marine Corps' antiarmor capability is also being improved. FY-87 is the first year for procurement of the TOW-2A missile, the most capable and lethal missile in the TOW family. The TOW-2A is capable of defeating all current threat armor. The Dragon, a medium antiarmor weapon, is undergoing a product improvement which will add a combined day/night tracking device and increase missile range and warhead penetration. The light antiarmor weapon (LAW), AT-4, will provide an antiarmor capability to the individual Marine.

The Light Armored Vehicle (LAV) was developed to fill a requirement for increased firepower and tactical mobility within the Marine Corps. The LAV battalion contains six vehicle configurations: the basic LAV-25, and mortar, recovery, command and control, logistics and antitank variants. A LAV air defense vehicle is under development.

The M60A1, the Marine Corps' main battle tank, is reaching the end of its service life. The M1A1 tank, which has been approved as the replacement for the M60A1, will provide the Marine Corps a state of the art armor capability. First deliveries will occur in FY-90 and IOC is FY-90.

The modernization of Marine Corps artillery is continuing with the activation of additional self-propelled 155mm batteries for our general support artillery battalions. All direct support artillery battalions are now equipped with 155mm howitzers, and the M198 howitzer is included in the prepositioning programs. Our target acquisition capability has been enhanced by the fielding of the AN/TPQ-36 counterfire radar. An additional enhancement is the Navy and Marine Corps joint program for a remotely piloted vehicle (RPV). RPV units will provide the MAGTF with target acquisition, reconnaissance and radio relay capabilities. An interim ground-launched short range RPV system will be fielded in FY-87.



Improvements in the aviation combat element (ACE) of the Marine Corps have kept pace with the ground combat element (GCE). With the support of Congress, the introduction of the AV-8B will continue this year. This unique aircraft is compatible with our forward basing strategies and complements the flexible capabilities of our Corps. The AV-8B builds on the proven concepts of vertical/short take off and landing (V/STOL). Our first AV-8B squadron became operational last year and we have confirmed a pressing need for a two-seat trainer. The largest pilot transition requirement commences in FY-87 and will continue for the next few years. The timely introduction of this trainer, the TAV-8B, is critical to the safe and efficient conversion of our remaining light attack force.

The Marine Corps continues acceptance of the F/A-18. Our aircrews report that the F/A-18 is both a responsive and agile fighter, and a highly accurate attack platform. The first deployment of the F/A-18 as a part of the unit deployment program (UDP) occurs during July 1987.



During FY-86, 22 AH-1W attack helicopters were added to the Marine Corps. The acquisition of the AH-1W enables the Marine Corps to reduce existing inventory shortfalls as well as upgrade its capability. The T-700 engine in the AH-1W provides Marine attack helicopters the ability to operate anywhere in the world. The Hellfire missile system became operational with the introduction of the AH-1W. The incorporation of a night vision goggle-compatible cockpit lighting system gives the AH-1W an enhanced night capability.

Complementing improvements in waterborne assault capability in the 1990s, we have supported the development of the highly survivable MV-22A Osprey. As the replacement for the aging assault transport helicopter, this tilt-rotor aircraft will lift troops and small tactical vehicles into combat. Operating at speeds up to 250 knots at vastly improved ranges, Osprey will introduce greatly improved speed and flexibility to the assault.

The CH-53E, the most powerful helicopter in the free world, will complement the Osprey by providing the required heavy-lift capability into the 21st century. Its 16-ton lift capacity is necessary to enhance the operational mobility of the M198 155mm howitzer, the LAV, and other MAGTF heavy equipment.

We are continuing to restore and enhance the ability of our Force Service Support Groups (FSSGs) to support and maintain amphibious operations at all levels of MAGTF configuration. The manning level of the FSSGs is being increased to support all levels of MAGTF operations. Our reserve component combat service support force is being enhanced as well.

Under the umbrella of the Marine Corps Field Logistics System (FLS) our strategic mobility and sustainability are being improved through the development of components that are compatible with the 8'X 8' X 20' container in standard use on modern containerships. As part of the system we are procuring and fielding intermediate size containers called pallet containers (PalCons) and quadruple containers (QuadCons). The PalCon is a pallet container with a

capacity of 1,000 pounds while the QuadCon is a quadruple container with a capacity of 7,500 pounds. Both are waterproof and can be connected into arrays that are compatible with standard materiel handling equipment used with land, sea and air transportation. Other equipment is also being designed for use with standard shipping containers.

The Logistics Vehicle System (LVS) consists of a powered front-body unit and four interchangeable, rear-body trailer variants. This vehicle system will be capable of carrying standardized containers and heavy cargo, and will provide a necessary and significant improvement in tactical mobility while achieving a more supportable logistics vehicle fleet. The LVS became operational during FY-86 with more than 1,600 projected to be in service by the end of FY-88.

The 5/4-ton High Mobility Multipurpose Wheeled Vehicle (HMMWV) will be the primary light tactical vehicle for combat and combat support units. Its functions will include: troop and weapons transport; weapons platform; reconnaissance; fire support; medical evacuation; and command, control and communications applications. Fielding will continue through FY-88 on the initial contract and begin again in FY-91 to supply needed replacement vehicles.



New command and control systems to assist the Marine on the battlefield are in various stages of development and fielding. These systems provide improved command and control support to cope with the increased tempo and complexity of the modern battlefield, enabling the commander to bring together our diverse combat capabilities at the decisive time and place.

One of these systems is the Position Location Reporting System (PLRS). PLRS is an automated tactical command and control system that provides the user with accurate, real-time position locations. The Marine Integrated Fire and Air Support System (MIFASS) is another tactical command and control system designed to provide the Marine commander automated support for timely and efficient integration of close air support, artillery and naval gunfire.

Also in Program Objective Memorandum (POM) 88/89-92 is the Tactical Air Operations Module (TAOM), an important centerpiece for our air command and control modernization program. The number of TAOMs can be tailored to the size of the ACE in the MAGTF. The TAOM reduces set-up time and lift requirements, and requires fewer personnel than the currently fielded system. Capitalizing on a unique modular and redundant architecture, the TAOM provides a significant improvement in reliability that provides continuous availability for the MAGTF.

Our ability to produce and disseminate intelligence to tactical commanders is developing rapidly under the Marine Air-Ground Intelligence System (MAGIS). The Intelligence Analysis Center (IAC), the "heart" of MAGIS, became operational in 1986. Other items being developed include the All Source Imagery Processor (ASIP), a soft-copy imagery exploitation system which exploits electro-optical, infrared, and radar imagery in near real-time from tactical and national sources. Our signals intelligence and electronic warfare systems will be modular, transportable and semiautomated. They will intercept, identify, locate and jam threat signals from both airborne and ground based platforms as well as analyze and report intelligence information from tactical and national sources.

We remain dedicated to improving the ability of tactical commanders to exploit national intelligence capabilities through the Tactical Exploitation of National Capabilities (TENCAP) program. TENCAP assists in developing the systems, procedures, and force structure required to accomplish this vital function. It also educates and exercises our operational commanders in accessing those national systems which complement tactical reconnaissance.

The Marine Corps must be capable of rapidly deploying to respond to crises or contingency situations. We plan our embarkation process manually; however, we are currently developing an automated information system, called the Computer Aided Embarkation Management System (CAEMS), which will use a microcomputer and state of the art graphics. This system will enhance the Marine Corps' capability to combat-load ships and aircraft with each MAGTF's complement of supplies and equipment by providing automated embarkation plans.

We have made significant strides in waterborne tactical mobility. Loaded on the LSD-41 and other well-deck ships, and launched from over the horizon (OTH), the 40-knot-capable Landing Craft Air Cushion (LCAC), in conjunction with the helicopter and the MV-22A Osprey will reduce the risk to the amphibious force while enhancing the surprise, mass and maneuverability of the assault force. The initial operating capability (IOC) for the first LCAC squadron home ported at Camp Pendleton, California, was 1986. To date, four craft have been delivered.

The Commandant has consistently stated that the Marine Corps' top priority is readiness. The readiness of our FMF commands to respond rapidly throughout the entire spectrum of conflict continues to be the Marine Corps' top priority. Our emphasis on readiness is apparent in the array of MAGTFs which are fully combat ready and prepared for any contingency.

Several years ago the Marine Corps completed an extensive review of the FMF special operations capabilities. It was determined that MAGTFs were uniquely qualified to conduct a broad spectrum of special operations in a maritime environment, particularly when the situation called for the integration of helicopterborne or waterborne forces from the sea.

Realizing that a significant capability for special operations was already present within our MAGTFs, the Commandant, at that time, directed that an aggressive effort be undertaken to optimize that capability. CG FMFLant was tasked to undertake a pilot program, focusing on enhancement of the capability of forward-deployed MAUs to conduct appropriate special operations. This effort has evolved into the present Marine Amphibious Unit (Special Operations Capable) (MAU(SOC)) program.

It is not our intent to establish new units which would unnecessarily duplicate special purpose organizations such as Special Forces or SEALs. We recognize the unique character and importance of such special organizations, and it is our intent to work toward ensuring that Marine Corps special operations capabilities are complementary. Our initial objective is to ensure that our MAUs, which are routinely deployed with the fleet, are fully capable of conducting appropriate operations by themselves or, in conjunction with other special purpose organizations.

In summary, as Marines, we have the unique capability, unmatched anywhere in the world today, to make a forcible entry from the sea with a fully integrated, mission-tailored, combined arms and self-sustaining team. Along with the Navy we provide the amphibious ready forces that enable our country to keep the qualitative edge needed to provide a decisive, credible response in global crises.

## CHAPTER II

### RESOURCE ALLOCATION OVERVIEW

#### Introduction

The DOD Planning, Programming and Budgeting System (PPBS) is the framework within which decisions are made relative to investment in force structure, modernization, readiness and sustainability. Decisions impacting on acquisition programs are made in the context of both the systems acquisition process and the PPBS. The relationship between the two processes is fundamental. It is the PPBS which provides access to the resources and the fiscal wherewithal for the acquisition process to work. In other words, the systems acquisition process is closely linked to the PPBS, because it depends on the PPBS to provide the planning, programming, and for ultimately budgeting the fiscal profile into which the acquisition programs are fitted for annual presentation to Congress.

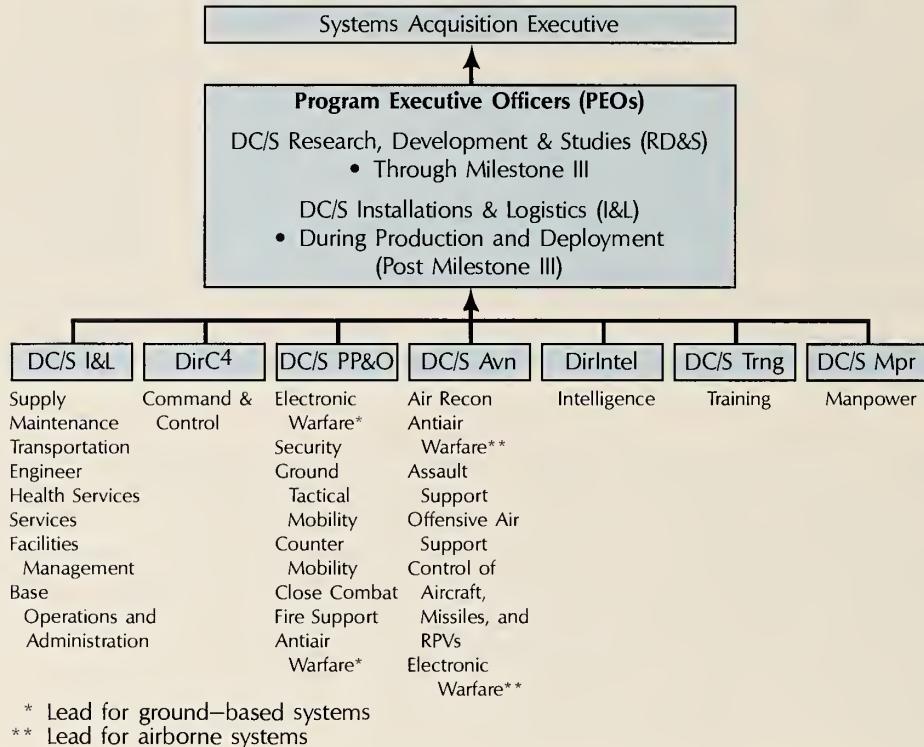
The Deputy Chief of Staff for Requirements and Programs is responsible for development of the Marine Corps' input to the Department of the Navy Program Objective Memorandum (DON POM). The Marine Corps POM is developed to address the guidance contained in the Defense Guidance (DG). In addition to the DG, the POM incorporates the goals and objectives expressed during the program development cycle by the Commandant of the Marine Corps and the Secretary of the Navy's DON Consolidated Planning and Programming Guidance (DNCPPG). The POM expands in the Five Year Defense Program (FYDP) by adding a year and incorporating new initiatives submitted by the acquisition program sponsors. These sponsors are the separate department and division heads at Headquarters, Marine Corps.

Mission area analyses (MAAs) (see figure II-1) are used to identify deficiencies between required and existing capabilities for each mission area and to support the development of the Marine Corps Long Range Plan (MLRP), the Mid-Range Objectives Plan (MMROP) and the POM. The MLRP assesses the period of time 20-30 years in the future: it describes the operational, organizational and materiel concepts that the Marine Corps intends to implement in order to carry out its projected roles and missions. The MMROP translates long-range plans into more definitive goals and objectives that should be accomplished in the 5 years of the POM, plus the next 10 years. The MLRP and the MMROP plan the operational direction for the Marine Corps. The MAAs determine deficiencies within mission areas. After identifying capability shortfalls, the acquisition program sponsor must ensure that each deficiency is reviewed for potential solutions through modification of doctrine, tactics, techniques, training and organization before a material solution is considered (see figure II-2). The deficiencies in material solutions are then translated into requirements which may then compete for incorporation in the POM.

At this point the Marine Corps would look for an off-the-shelf, nondevelopmental commercial item to fill the requirement. If one does not exist then a sponsor may link a Marine Corps requirement to another service's similar requirement and join with a development or procurement effort being conducted

**Note:** The Defense Reorganization Act passed by Congress in 1986, but not yet fully implemented, may modify the procedures described in this Chapter.

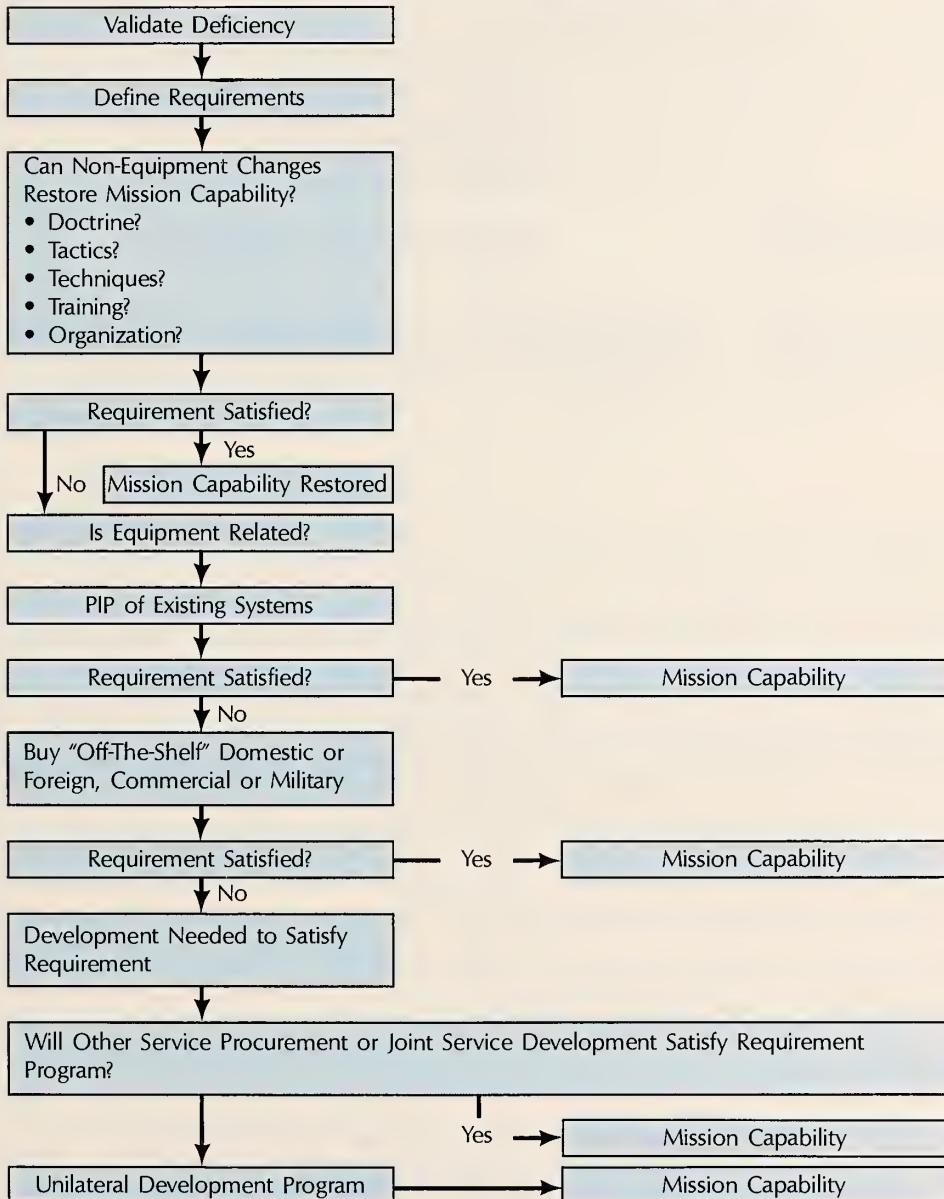
**Figure II-1: Acquisition Program Sponsors and Mission Areas**



by the other service. In this manner the Marine Corps is able to avoid bearing total development costs. If, however, another service program or a joint development program does not fill the requirement, then the Marine Corps will conduct a unilateral development program for unique Marine Corps requirements. The last course of action is usually the most costly. Therefore, the DC/S RD&S, the PEO during the development phase and responsible for initiating and coordinating Marine Corps policy for the systems acquisition process, will only initiate a unilateral development program if there is no other solution to the requirement. Regardless, solutions requiring resources must be competed as initiatives in the POM process, which begins with a warfighting capabilities assessment. The assessment highlights deficiencies identified by the force commanders and acquisition program sponsors at HQMC, and supports the program development effort. The acquisition program sponsors work closely with the DC/S RD&S during the research and development phase of a program and with the DC/S I&L during the production phase.

Procurement initiatives are the result of CINC-identified warfighting requirements and needs flowing from the DG, DNCPPG, MMROP and/or CMC guidance and are identified through MAA. The DG and MAAs provide the bridge between planning and programming phases of PPBS, and the POM is the link between planning and budgeting (see figure II-3).

**Figure II-2: Programming for New Marine Corps Requirements**



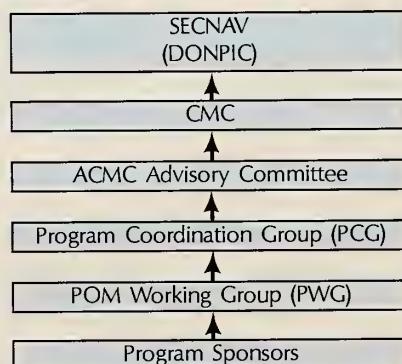
Note: Figures II-1 and II-2 are adapted from "The Marine Corps System Acquisition Process" by Dave Brown and Tom Mulkerin in The Amphibious Warfare Review, August 1985.

**Figure II-3: Overview of Planning, Programming and Budgeting System (PPBS)**

- Planning
  - View the threat
  - Develop strategy and policy
  - Develop force planning guidance
- Programming
  - Translate planning into achievable program packages
  - Apply fiscal and resource constraints
  - Develop the FYDP
- Budgeting
  - Focus on submission to Congress
  - Review the executability of programs
  - Emphasize justification of programs formulated with detailed back-up
  - Execution of expenditures for programs

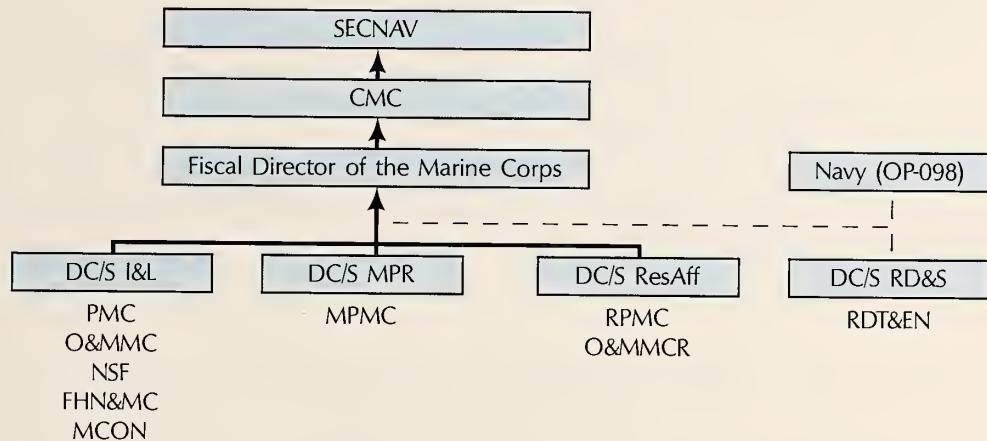
When acquisition program sponsors submit program initiatives into the PPBS/POM process, these initiatives are prioritized with respect to all other program initiatives submitted by sponsors and are considered over and above the "core"; i.e., the "core" program sets artificially low funding levels for all programs to force identification of lower priority programs. These lower priority programs are then required to recompete for funding with all other identified deficiencies and new initiatives. Program priorities within the POM process are established using decision analytical tools and cost-benefit analysis so that the programming committees, can objectively establish priorities among unlike programs (see figure II-4). The top programs from the initiative prioritization process that can be accommodated above the core and within the established funding ceiling, form the new Marine Corps POM. This POM is then submitted for consolidation with the Navy POM and becomes the DON POM after SecNav review and approval. The DON POM (and other service POMs) are then reviewed in detail by the Defense Resource Board (DRB) and approved for incorporation in the Defense Budget.

**Figure II-4: Structure for POM Development and Review**



The most mature 2 years of the POM then go through extensive reviews by the Navy Comptroller and Office of the Secretary of Defense (OSD) before they transition into the Marine Corps' portion of the President's Budget. At that time they become the management responsibility of the Fiscal Director of the Marine Corps and appropriation sponsors (see figure II-5).

**Figure II-5: Marine Corps Appropriation Sponsors**



Programs that are included in the President's Budget must have reached Milestone III or be approved for service use by the service acquisition executive. Once approved for service use the DC/S I&L, in coordination with the acquisition program sponsor, is responsible to the Commandant for the actual acquisition of the equipment and for bringing it into the Marine Corps inventory, once the President's Budget is approved by Congress.

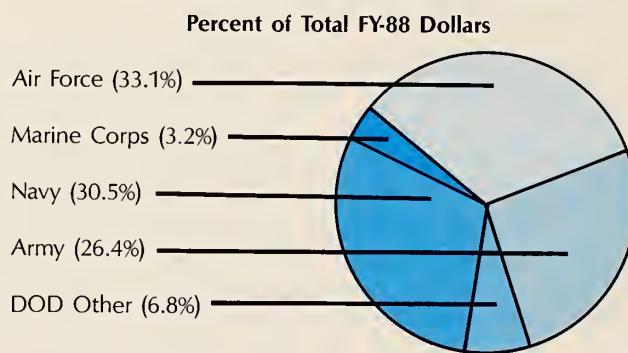
## Financial Resources

Financial resources are the funds that are programmed, budgeted, obligated, outlaid and finally expended to cover service investment and operational requirements. Total financial resources allocated to DOD (and to each service) are called the Total Obligational Authority (TOA). The DOD PPBS establishes the ground rules for the allocation of the DOD TOA. Displayed below is the DOD TOA for all services from FY-86 through PresBud 88/89:

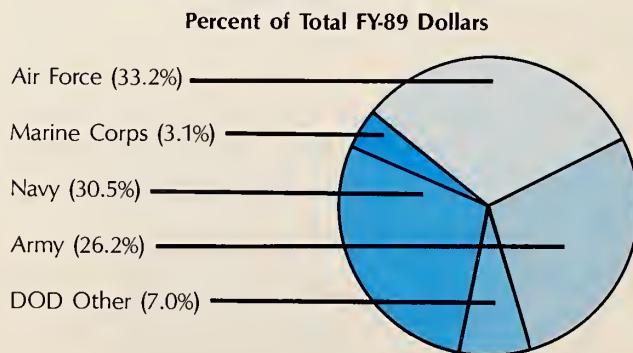
	<u>FY-86</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>
\$ Billion	280.5	281.7	303.3	323.3

Directly following in figures II-6 and II-7 are charts which display the percentage of DOD funds budgeted by each service/agency for FY 88/89. This TOA is subsequently divided into appropriations.

**Figure II-6: Department of Defense Dollars**



**Figure II-7: Department of Defense Dollars**



## Appropriations

An appropriation is the legal apportionment by an act of Congress to incur obligations for specified purposes and to make payments from the Treasury of the United States. There are three types of appropriations in the Marine Corps:

- Annual
  - Military Personnel
  - Operation and Maintenance
- Multi-year
  - Procurement
  - Military Construction
  - Family Housing
- Revolving
  - Stock Fund (to be combined with the Navy Stock Fund in FY-88)

Funds may be expended only for the purpose for which appropriated. Following are the USMC appropriation titles with a brief synopsis of what each provides:

- Military Personnel, Marine Corps (MPMC) - For pay, allowances, individual clothing, subsistence, interest on deposits, expenses for organization movements and expenses of temporary duty travel between permanent duty stations.
- Reserve Personnel, Marine Corps (RPMC) - For pay, allowances, clothing, subsistence, gratuities, travel, and related expenses for personnel of the Marine Corps Reserve on active duty.
- Operation and Maintenance, Marine Corps (O&MMC) - For expenses necessary for support of the FMF, civilian employee pay, travel and transportation, training, consumable supplies, recruiting and advertising, base operations and base communications.
- Operation and Maintenance, Marine Corps Reserve (O&MMCR) - For expenses necessary for the operation and maintenance, including training, organization and administration of the Marine Corps Reserve; repair of facilities and equipment; hire of passenger motor vehicles; travel and transportation; recruiting; procurement of services, supplies and equipment; and communications.
- Procurement, Marine Corps (PMC) - For expenses necessary for the procurement and manufacture of ammunition, weapons and tracked combat vehicles, guided missiles and equipment, communication and electronics, support vehicles, engineer and other equipment, and spares and repair parts.

Navy appropriations of which Marine Corps programs its share:

- Military Construction, Navy (MCON) - For acquisition, construction and installation of temporary or permanent public works, naval installations and facilities for the Navy and the Marine Corps.
- Family Housing, Navy and Marine Corps (FHN&MC) - For the construction, maintenance, repair and design of Navy and Marine Corps housing and ancillary facilities required at bases and stations world-wide.
- Navy Stock Fund (NSF) - For the procurement of stock funded War Reserve Materiel required to achieve a materiel support posture to provide war reserve asset levels and inventory objectives for combat-critical items. Examples include: supplies, minor items of equipment, and parts used in the manufacture, assembly or repair of items of equipment.

These three Navy appropriations are divided into the blue/green (Navy/Marine Corps) split. The split is calculated by DON and DC/S R&P following receipt of the fiscal guidance for POM development. The blue/green split is based on the ratio of USMC to DON TOA.

A display of the TOA in millions of FYDP dollars allocated to each of these appropriations is displayed below:

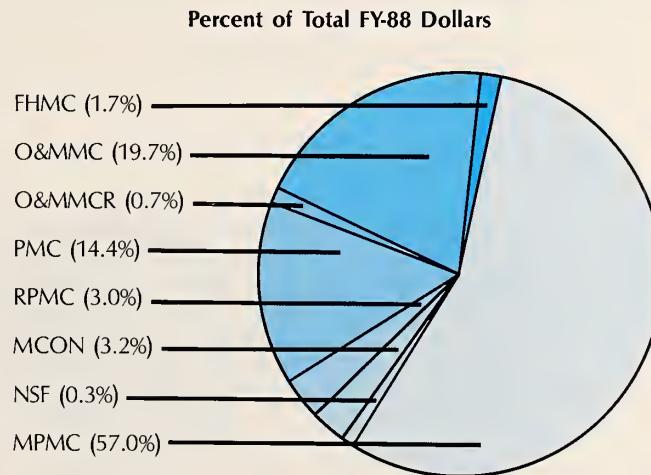
	<u>FY-86</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>
MPMC	5,161.1	5,446.9	5,549.0	5,534.3
RPMC	283.1	278.3	294.7	302.6
O&MMC	1,575.6	1,809.6	1,918.4	1,939.2
O&MMCR	54.4	64.2	71.4	85.2
PMC	1,531.5	1,465.2	1,402.4	1,646.5
NSF	35.8	0.8	32.9	39.4
MCON	226.1	262.8	313.2	322.2
FHMC	126.9	146.1	162.3	161.9
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<b>TOTAL</b>	<b>8,994.4</b>	<b>9,473.7</b>	<b>9,744.3</b>	<b>10,031.3</b>

In addition to MCON, FHN&MC and NSF the Marine Corps also receives funding support through the following Navy "blue dollar" appropriations:

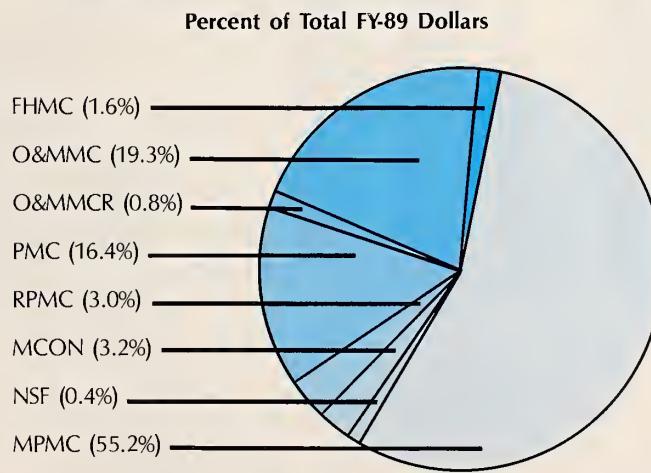
- Aircraft Procurement, Navy (APN)
- Research, Development, Test and Evaluation, Navy (RDT&EN)
- Military Construction Navy Reserve (MCNR)
- Other Procurement, Navy (OPN)
- Military Personnel, Navy (MPN)
- Reserve Personnel, Navy (RPN)
- Operation and Maintenance, Navy (O&MN)
- Operation and Maintenance, Navy Reserve (O&MNR)
- Weapons Procurement, Navy (WPN)

The allocation to the appropriations of this TOA is shown below (see figures II-8 and II-9).

**Figure II-8: USMC Appropriations Composition**



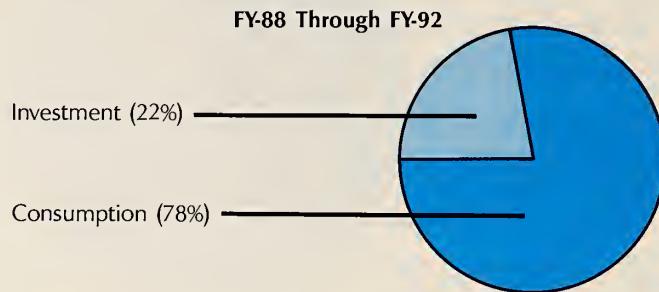
**Figure II-9: USMC Appropriations Composition**



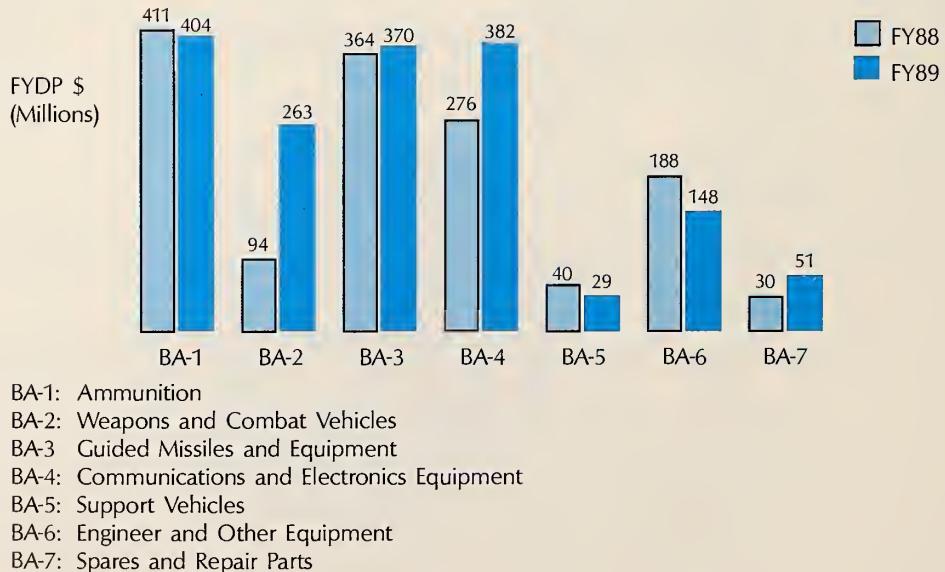
The Marine Corps is manpower intensive as illustrated in these charts. The personnel pay accounts, active duty, reserve and civilian, total approximately 63 percent of the total TOA.

Figure II-10 displays the Marine Corps' resources and shows the comparison between investment and consumption accounts. The figure includes PMC, MCON and the investment portion of our family housing. The preponderance of the investment dollars are PMC. Figure II-11 depicts how the Marine Corps PMC is allocated to budget activities for PresBud 88/89.

**Figure II-10: Investment vs Consumption, USMC**



**Figure II-11: PMC Total by Budget Activity**



Part of the large increase in BA-2 from FY-88 to FY-89 reflects the allocation of funds to the M1A1 MBT. The increase in BA-4 from FY-88 to FY-89 includes funding for PLRS and vehicle mounted radios and equipment.

## CHAPTER III

### PROGRAMS FOR IMPROVED MARINE AIR-GROUND TASK FORCE (MAGTF) CAPABILITIES

#### Part 1

##### Ground Combat Element

###### Introduction



The GCE of a MAGTF is a task organization tailored to accomplish a particular mission. It is constructed around an infantry unit and varies in size from a reinforced battalion to one or more reinforced Marine divisions. It includes the full range of ground combat systems.

This section is composed of those program areas associated with the mission area of ground combat.

LIGHT ANTIARMOR WEAPON, AT-4

DESCRIPTION: The AT-4 is a shoulder-fired rocket launcher with a high explosive antiarmor warhead. This weapon provides the individual Marine with an antiarmor capability. The 84mm AT-4 is a man-portable, single shot, throwaway weapon that will replace the current 66mm Light Antiarmor Weapon (LAW).

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	14,498	19,617	16,212	19,165	17,321	-	5,713

WHY IS IT IMPORTANT? The AT-4 will provide individual Marines an antiarmor capability on the battlefield. Although heavier than the present LAW, the AT-4 will provide greater lethality and penetration.

PROGRAM STATUS: Procurement of the AT-4 began in FY-86 and will continue until the current LAW is replaced.

DEVELOPER/MANUFACTURER: Honeywell



### COMBAT EXCAVATOR

DESCRIPTION: The combat excavator is an armored combat earthmover designed to support the MAGTF. The combat excavator will possess the ability to rapidly move overland and to cross inland water obstacles. It will provide crew protection from hostile fires not currently available in Marine Corps engineer excavation equipment. It will provide significant improvements in survivability, mobility and countermobility. It will also provide aviation units with capabilities for rapid runway repair and assist in the clearance of unexploded submunitions.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	-	17	88	92
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WHY IS IT IMPORTANT? The Marine Corps currently relies on commercial type construction equipment for its combat engineer battalions. This equipment is not responsive to the increased mobility of the MAGTF or to combat engineer support throughout the battlefield. The combat excavator provides a wide range of combat engineer capabilities. It will supplement or replace several pieces of construction equipment and enhance combat engineer responsiveness.

PROGRAM STATUS: The Marine Corps will employ an off-the-shelf nondevelopmental item acquisition strategy. This strategy will provide for an operational test dig-off for all potential systems.

DEVELOPER/MANUFACTURER: TBD

### M1A1 MAIN BATTLE TANK (MBT)

DESCRIPTION: The M1A1 MBT is an improved version of the M1. The M1A1 weighs 63 tons but will exert only 13.7 pounds per square inch of ground pressure. It will be powered by a 1,500 horsepower air-cooled, regenerative turbine engine. The M1A1 is armed with a 120mm stabilized cannon, and has improved armor and nuclear, biological and chemical (NBC) protection.

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	-	-	LLI	66	107	123	163

WHY IS IT IMPORTANT? The M60A1, our current MBT, is reaching the end of its service life. Its replacement, the M1A1, is the most advanced and survivable MBT available. The M1A1 program represents a major upgrading of the armor capabilities within the Marine Corps. Increased armor protection, improved fire control, greater speed and agility, and increased firepower will enhance the combat capabilities and survivability of this MBT.

PROGRAM STATUS: The M1A1 was approved for service use and procurement by the USMC in February 1985. IOC is scheduled for FY-90.

DEVELOPER/MANUFACTURER: General Dynamics



REMOTELY PILOTED VEHICLE (RPV)



DESCRIPTION: This program enhances the Marine Corps' ability to meet requirements to provide target acquisition, battlefield surveillance, reconnaissance, and radio relay capability in support of the MAGTF. The Marine Corps has operated a single Mastiff III RPV system for the past three years in order to refine requirements and develop Navy and Marine Corps Concepts of Employment. An RPV system is comprised of eight air vehicles, associated payload packages, a ground control station (GCS), a portable control station (PCS), remote receiving station and launch/recovery subsystems.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	1	2	3	3	4	4	4
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WHY IS IT IMPORTANT? The Marine Corps' interest in developing an RPV capability dates from the 1975 Marine Corps Mid-Range Objectives Plan which identified a need for an unmanned aerial vehicle system that could be used to accomplish target acquisition, reconnaissance and radio relay. The RPV provides those capabilities in high threat scenarios where the use of expensive manned aircraft and highly trained crew members may be imprudent. The use of RPVs also releases manned platforms for employment in missions requiring human judgement and expertise.

PROGRAM STATUS: The Marine Corps and the Navy have formed a joint office, with the Navy as Executive Service, for the procurement of RPV systems within the DON. The program office is staffed by both Navy and Marine Corps personnel. Under the Interim Ground Launched Short-Range Program, authorized by Secretary of the Navy in July 1985, five Pioneer RPV systems will be procured prior to FY-88. Three of these systems will be fielded by the Marine Corps, thereby establishing a minimum essential capability (MEC). Three RPV companies, one in support of each MAF, will operate the Marine Corps RPV systems. IOC for the follow-on ground launched short-range RPV is FY-88. Current plans call for acquisition of 18 RPV systems to satisfy Marine Corps requirements.

DEVELOPER/MANUFACTURER: Interim - AAI Corporation, Cockeysville, Maryland

## M252 IMPROVED 81mm MORTAR

DESCRIPTION: The M252 is a crew-served, lightweight mortar which is highly accurate and has a greater range than the current 81mm mortar.

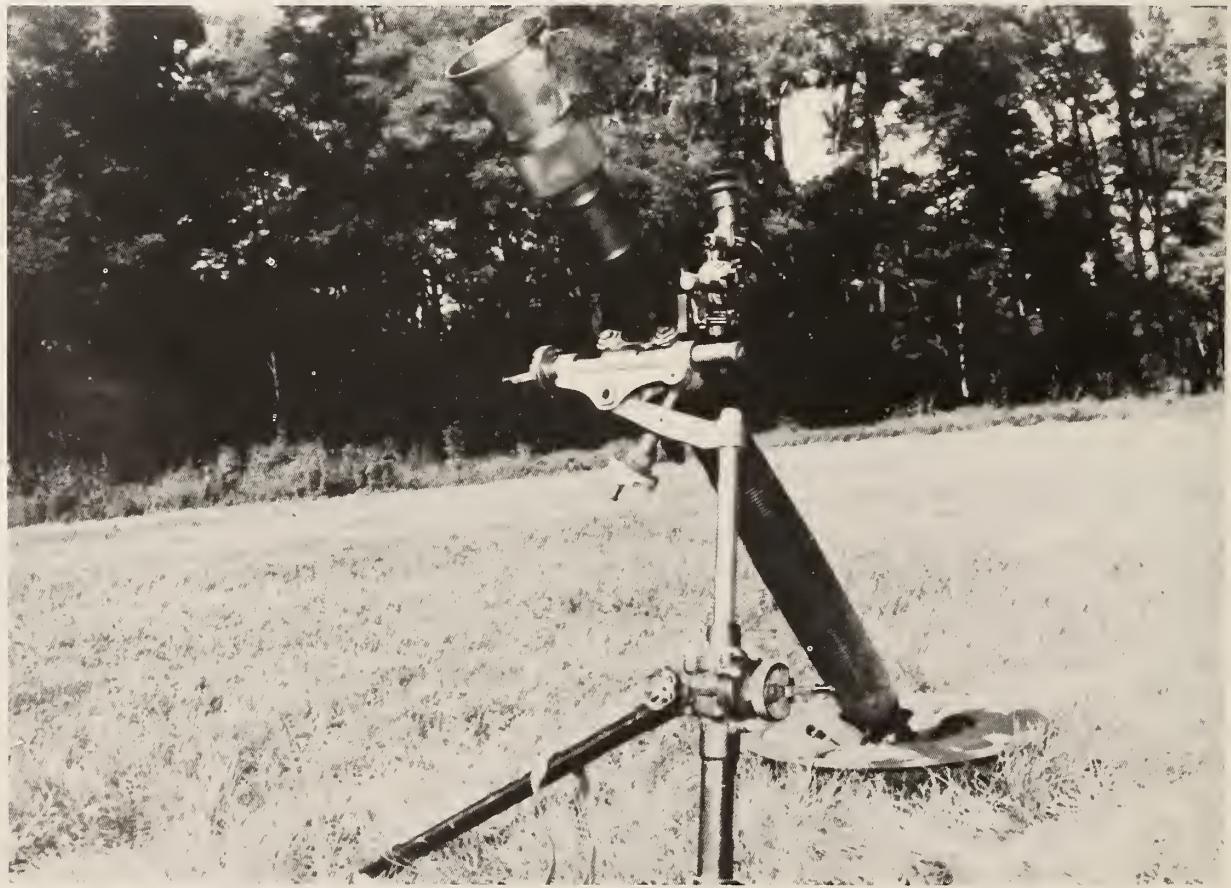
PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	50	350	264	-	-	-	-
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WHY IS IT IMPORTANT? The M29A1 81mm mortar is very old and must be replaced. The M252 is a proven, more capable mortar that will provide increased range (4,500 meters to 5,650 meters), greater lethality and increased portability.

PROGRAM STATUS: The Marine Corps approved the weapon for service use and procurement and will replace all M29A1 mortars on a one-for-one basis. The M252 will also be mounted in the mortar variant of the LAV.

DEVELOPER/MANUFACTURER: Royal Ordnance Factories, London, England



M249 SQUAD AUTOMATIC WEAPON (SAW)



DESCRIPTION: The M249 SAW is a gas operated, magazine or belt fed, light machine gun that will replace the M16 as the automatic rifle in the fire team. It will increase the firepower of Marine infantry units, with a capability of engaging point targets out to 800 meters, firing the improved, NATO standard 5.56mm cartridge (M855). The SAW will also be fielded throughout all combat, combat support and combat service units, as well as Marine barracks.

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	8,024	1,000	1,039	572	-	-	-

WHY IS IT IMPORTANT? The Marine Corps needs a weapon which will provide aimed and suppressive fire at extended ranges. The M249 provides a sustained rate of fire of 85 rounds/minute (1,000 rounds/minute (cyclic)) and has a maximum effective range of 1,000 meters against area targets. The procurement of this weapon will put the Marine Corps on an equal footing with threat forces equipped with RPK and PK machine guns.

PROGRAM STATUS: Procurement of the weapon began in FY-82 and will continue through FY-89. A product improved buffer that will be retrofitted to the SAW will be procured as part of the FY 88/89 SAW production contracts.

DEVELOPER/MANUFACTURER: Fabrique Nationale of Herstal, Belgium

### MK-19 MOD-3 40mm GRENADE LAUNCHER

DESCRIPTION: The MK-19 is a crew-served, automatic grenade launcher capable of engaging light armored vehicles and infantry out to 1,600 meters. The weapon weighs 75.6 pounds and will mount on the M3 machine gun tripod, the HMMWV and the 5-ton truck. It will also be used on the AAV7A1 Upgunned Weapon Station. The weapon fires the M430 round which is a high-explosive, dual purpose (HEDP) round which can penetrate 2 1/2 inches of rolled homogenous armor (RHA).

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	1,827	189	415	497	18	-	-

WHY IS IT IMPORTANT? The MK-19 was introduced to counter the growing numbers of infantry fighting vehicles with which potential enemies are equipping their forces. The addition of twelve MK-19s in each infantry battalion will increase its organic firepower, and will allow the antitank weapons to concentrate their fires on tanks.



PROGRAM STATUS: The MK-19 is a joint service acquisition which has participation by all services. IOC is scheduled for 3d quarter, FY-87.

DEVELOPER/MANUFACTURER: Maremount Corporation, Saco, Maine

DRAGON PRODUCT IMPROVEMENT PROGRAM (PIP)



DESCRIPTION: The M47 Dragon is a medium antiarmor weapon. It is a tube-launched, optically-tracked, wire-guided missile system which consists of a fiberglass launching tube, missile and tracker. The missile is contained within the launcher, and after each engagement the reusable tracker is removed from the launcher and the launcher is discarded.

PROCUREMENT PROFILE: PRIOR   FY-87   FY-88   FY-89   FY-90   FY-91   FY-92

Quantity

Phase 1	-	-	4,259	5,258	2,422	-	-
Phase 2	-	-	-	-	-	7,200	7,200

WHY IS IT IMPORTANT? The PIP of the current Dragon system is a two phased program that will provide a viable medium antiarmor weapon until the mid-1990s.

Phase I: This phase will retrofit our current inventory of missile warheads to enhance armor penetration by 80% over the current warhead's capability. This improvement is needed to defeat the current and postulated (1990s) armor threat.

Phase II: This phase provides for the procurement of an improved missile and tracker. The improved missile will be able to fly to 1,000 meters 5 seconds faster than the current missiles and will have a range of 1,500 meters vice the current 1,000 meters. The tracker will have a combination day/night capability and will not exceed 16 pounds in the ready-to-fire mode. The tracker will have an improved tracking capability to ensure a first round hit probability of at least 85 percent at the maximum range. It will have the ability to acquire and lock into a moving target at crossing speeds of 20 kilometers per hour at a range of 1,500 meters.

PROGRAM STATUS: The Marine Corps will procure the Dragon PIP as an interim replacement for the present Dragon while continuing to support the Army's development of the Advanced Antitank Weapon System-Medium (AAWS-M). Phase I will retrofit 11,939 missile warheads. For Phase II the Marine Corps may exercise three 1 year contract options in order to purchase 6,500 missiles and 700 missile trackers per year starting in FY-91.

DEVELOPER/MANUFACTURER: McDonnell Douglas

### TOW-2A

DESCRIPTION: The TOW-2A missile is the latest missile in the TOW family. It provides an antitank weapon with increased lethality, improved probability of hit, reduced-visibility capability, and a significant improvement in a counter-measure environment. The TOW-2A missile contains a six-inch warhead, reloaded flight motor and a thermal beacon.

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	-	3,250	2,680	2,585	2,562	1,627	1,579

WHY IS IT IMPORTANT? The improved missile will permit Marine infantry units to defeat advanced Soviet armor and will enhance the infantry's antiarmor capability on the battlefield.

PROGRAM STATUS: Procurement of the TOW-2A will begin in FY-87. Other TOW improvements are continuing. The missile ordnance inhibit circuit safety modification kit procurement will be completed in FY-88. The TOW optical improvement modification will harden 1,350 day sights and 602 night sights. The hardening will protect the sights and the operator against hostile electro-optical counter measures.

DEVELOPER/MANUFACTURER: Hughes Aircraft



M9 BERETTA PISTOL



DESCRIPTION: A 9mm, lightweight, double action, automatic pistol.

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	10,000	22,181	22,182	13,589	6,978	-	-

WHY IS IT IMPORTANT? The weapon will replace the current .38 and .45 caliber pistol which are at the end of their service lives and are no longer logistically supportable. The weapon will provide increased range, lethality, safety and interoperability within NATO. The new pistol will provide improvements in readiness due to readily available parts and ammunition commonality.

PROGRAM STATUS: A 5 year contract was awarded on 10 April 1985.

DEVELOPER/MANUFACTURER: Beretta USA Corporation

## Part 2

### Aviation Combat Element

#### Introduction

The ACE of a MAGTF is task organized to provide the required six functions of Marine aviation. These functions--air reconnaissance, antiair warfare, assault support, offensive air support, electronic warfare, and control of aircraft and missiles--are provided in varying degrees based on the tactical situation and the size of the MAGTF.

Normally, there is only one ACE in a MAGTF. It includes those aviation command (including air control agencies), combat, combat support, and combat service support units required by the situation. It varies in size from an aircraft squadron to an aircraft wing(s).

This section is a compilation of program summary papers on the major Marine Corps aircraft and aviation weapon system programs. These papers address modernization and force level issues associated with tactical aircraft (fixed-wing), assault aircraft and assault support aircraft, as well as an array of antiarmor weaponry, air defense missiles, and command and control systems. Profiles for joint aircraft programs; i.e., the F/A-18, A-6F, EA-6B, V-22A, and CH/MH-53E reflect both the total DON planned procurement and the estimated USMC portion of the PresBud 88/89 program.



Proposed V-22A Flight Crew Station

AV-8B "HARRIER"



DESCRIPTION: The AV-8B is a single seat, transonic, vectored-thrust, light-attack aircraft. The AV-8B is capable of increased payloads and extended range, and offers improved reliability and maintainability over the AV-8A. It is designed with a V/STOL capability to provide increased responsiveness to ground force close air support requirements through basing flexibility and high sortie rates. It will be configured with the Angle Rate Bombing System (ARBS) which provides an extremely accurate first pass attack capability and high kill probability through the use of passive laser spot or TV tracking.

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	138	42	32	32	15	15	15

WHY IS IT IMPORTANT? USMC tactical aviation is required to support amphibious and ground forces in a timely and effective manner. As part of tactical aviation, the missions of the light attack aircraft are close air support and interdiction. These missions are performed by the USMC either independently or as part of an expeditionary force, and require close air support aircraft with operational flexibility. The high degree of mobility inherent in ground combat operation results in rapid changes in the size and location of the battlefield. Consequently, demands for close air support operations frequently occur at considerable distances from established airfields and in terrain that is not suitable for construction of conventional support facilities. Thus, combat air support response times are greater than desired with conventional aircraft. V/STOL attack aircraft can respond to these combat requirements more rapidly because their flexibility enables them to be based closer to the battlefield.

PROGRAM STATUS: Transition to an all V/STOL light attack force of eight operational squadrons and one training squadron is approximately 50 percent complete.

DEVELOPER/MANUFACTURER: McDonnell Douglas

## F/A-18 "HORNET"



DESCRIPTION: The F/A-18 is a twin-engine, single pilot, supersonic fighter and attack aircraft. The aircraft will fulfill both air-to-air and air-to-ground mission requirements. It has the capability to be both land and carrier based. The F/A-18 incorporates state of the art technology such as digital fly-by-wire flight controls, multimode radar and use of lightweight composites to enhance the combat capability and flexibility of the aircraft. A requirement to add increased night, marginal-weather and tactical reconnaissance capability is currently being developed.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

### Quantity

DON	494	84	84	72	72	72	72
USMC - estimate	120	27	56	37	70	49	14

WHY IS IT IMPORTANT? The Marine Corps' requirement for a fighter and attack aircraft has been filled by the F-4 Phantom. These aircraft are among the oldest in the DON. Additionally, the Phantom incorporates early 1960's technology which seriously hampers its combat effectiveness against current threat aircraft and air defense systems. The F/A-18 has the capability to accomplish the Marine Corps' fighter and attack mission and the adaptability to be effective for the next 20 years.

PROGRAM STATUS: The Marine Corps currently has six operational F/A-18 squadrons, each with 12 aircraft. In FMF employment, the F/A-18 has proven to be inordinately capable and effective.

DEVELOPER/MANUFACTURER: McDonnell Douglas

## F/A-18 RECONNAISSANCE KIT

DESCRIPTION: The F/A-18 reconnaissance kit, when installed in the two-seat F/A-18D, will allow that aircraft to perform all-weather, real-time aerial reconnaissance in support of the MAGTF. The initial kit, which contains a side-looking radar, an infrared line scanner, a tape recorder and a datalink, will be continuously improved by adding longer-range sensors, and higher-capacity recorders anddatalinks. The Hornet, with the kit installed, will still retain all its capabilities as superior fighter and attack aircraft except for the nose gun, which will be removed during reconnaissance missions to accommodate some of the specialized equipment.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	-	-	-	12
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WHY IS IT IMPORTANT? The Marine Corps' requirement for photo reconnaissance has been satisfied by RF-4B Phantoms. These aircraft are becoming more difficult and costly to support as F-4 fighters are phased out of the Marine Corps inventory. The F/A-18 meets the requirements for an easily supported, more survivable, state of the art platform to carry on the mission of aerial reconnaissance.

PROGRAM STATUS: A development program is well underway to add an all-weather, real-time reconnaissance capability to the two-seat F/A-18D. IOC is scheduled for FY-92.

DEVELOPER/MANUFACTURER: TBD

## CH/MH-53E "SUPER STALLION"

DESCRIPTION: This 3-engine helicopter is designed to lift 16 tons over a 50 nautical mile (NM) combat radius. It has a 79-foot main rotor diameter, seven titanium spar main rotor blades, a 20-foot diameter tail rotor that is canted 20 degrees, and a main gear box qualified to 13,140 shaft horsepower. This shipboard-compatible helicopter is an assault support aircraft that can be employed for the internal lift and movement of cargo for the recovery of tactical aircraft and for the external lift of weapons and equipment.



PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

### Quantity

DON	107	14	14	14	4	-	-
USMC - estimate (CH-53E)	79	10	6	7	4	-	-

WHY IS IT IMPORTANT? This helicopter is the Marine Corps' heavy lift assault support helicopter and is an integral part of our present helicopter lift force. The CH-53E satisfies the requirement for the tactical movement of heavy weapons and equipment in the amphibious assault subsequent operations ashore, and provides lift for retrieval of downed aircraft and damaged equipment.

The Marine Corps has a mid-term requirement for a minimum of six squadrons of CH-53Es to meet the heavy lift demands of a force which will include the M-198 howitzer and its prime mover, division heavy equipment and the FLS. The existing programmed procurement of CH-53E aircraft supports four squadrons.

PROGRAM STATUS: The Marine Corps plans to continue aircraft procurement throughout the FYDP, which currently reflects a 106-aircraft DON program in support of both Marine Corps heavy lift requirements. Additional procurement will be required in FY 90-92 in order to meet Marine Corps heavy lift requirements.

DEVELOPER/MANUFACTURER: Sikorsky Aircraft

### A-6F "INTRUDER"

DESCRIPTION: The A-6F is a two-seat, twin-engine, subsonic attack aircraft capable of striking targets day or night in all weather conditions. This versatile aircraft carries a wide range of conventional and/or nuclear weapons for a variety of mission areas to include long-range interdiction, war-at-sea, strikes, mining and close air support. The aircraft has a sophisticated attack/navigation system to support all-weather, low-altitude, terrain following and terrain avoidance flight as well as a radar and forward looking infrared (FLIR) sensor to acquire and strike targets without visual acquisition by the aircrew. The A-6F is a significant upgrade to the A-6E and will improve fleet reliability, performance and survivability against the projected threat of the 1990s and beyond.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

#### Quantity

DON	-	-	12	18	24	24	36
USMC - estimate	-	-	-	-	-	12	12

WHY IS IT IMPORTANT? The A-6F is an all-weather attack aircraft, and provides the MAGTF commander a capability to conduct close air support during periods of darkness and under adverse weather conditions.



PROGRAM STATUS: The Marine Corps will retain the earlier aircraft, the A-6E pictured above, into the 1990s. Two of five A-6E squadrons will transition to the A-6F in the early 1990s.

DEVELOPER/MANUFACTURER: Grumman Aerospace

### EA-6B "PROWLER"

DESCRIPTION: The EA-6B is a four-place, twin-turbojet aircraft with a fully integrated, computer-controlled electronic warfare system. The aircraft is deployable from austere shore bases or aircraft carriers. The EA-6B's ALQ-99 Tactical Jamming System consists of on-board receivers and up to five externally mounted ECM pods, and in combination with the Tactical Electronic Reconnaissance Processing and Evaluation System (TERPES), is capable of providing electronic countermeasures and tactical intelligence support for MAGTF operations.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity

DON	133	12	6	9	9	9	9
USMC - estimate	15	1	1	2	2	2	2

WHY IS IT IMPORTANT? The Marine Corps requires the EA-6B tactical electronic warfare (EW) aircraft to protect and screen USMC strike force and close air support aircraft. This aircraft denies the enemy effective use of early warning, ground control intercept, surveillance/acquisition and terminal threat (gun & surface-to-air missile) radars. In addition to tactical battlefield jamming support, the EA-6B provides the Marine Corps with a capability for near real-time intelligence input via TERPES to the MAGTF commander. The EA-6B is essential to aircraft survival on the modern electronically-dominated battlefield.

PROGRAM STATUS: Current force levels, while providing a meaningful warfighting capability, are insufficient to support overall MAGTF requirements. Additional procurements are required to combat the 1990s threat density and capabilities.

DEVELOPER/MANUFACTURER: Grumman Aerospace



### AH-1W "SEA COBRA"

DESCRIPTION: The AH-1W, formerly called AH-1T+, is a two-place, tandem-seat, twin-engine attack helicopter capable of land or sea based operations. Its primary tasks are armed support for aerial or ground operations and point destruction of enemy armor. Improvements to the Sea Cobra since initial procurement in 1978 permit it to fire a variety of weapons to include TOW, Hellfire, Sidewinder and Sidearm. The aircraft incorporates the GE T-700 engine, which results in a quantum improvement in high/hot operations and safety of flight. In addition to the AH-1W procurement shown below, 37 AH-1Ts are being converted to the more capable AH-1W.



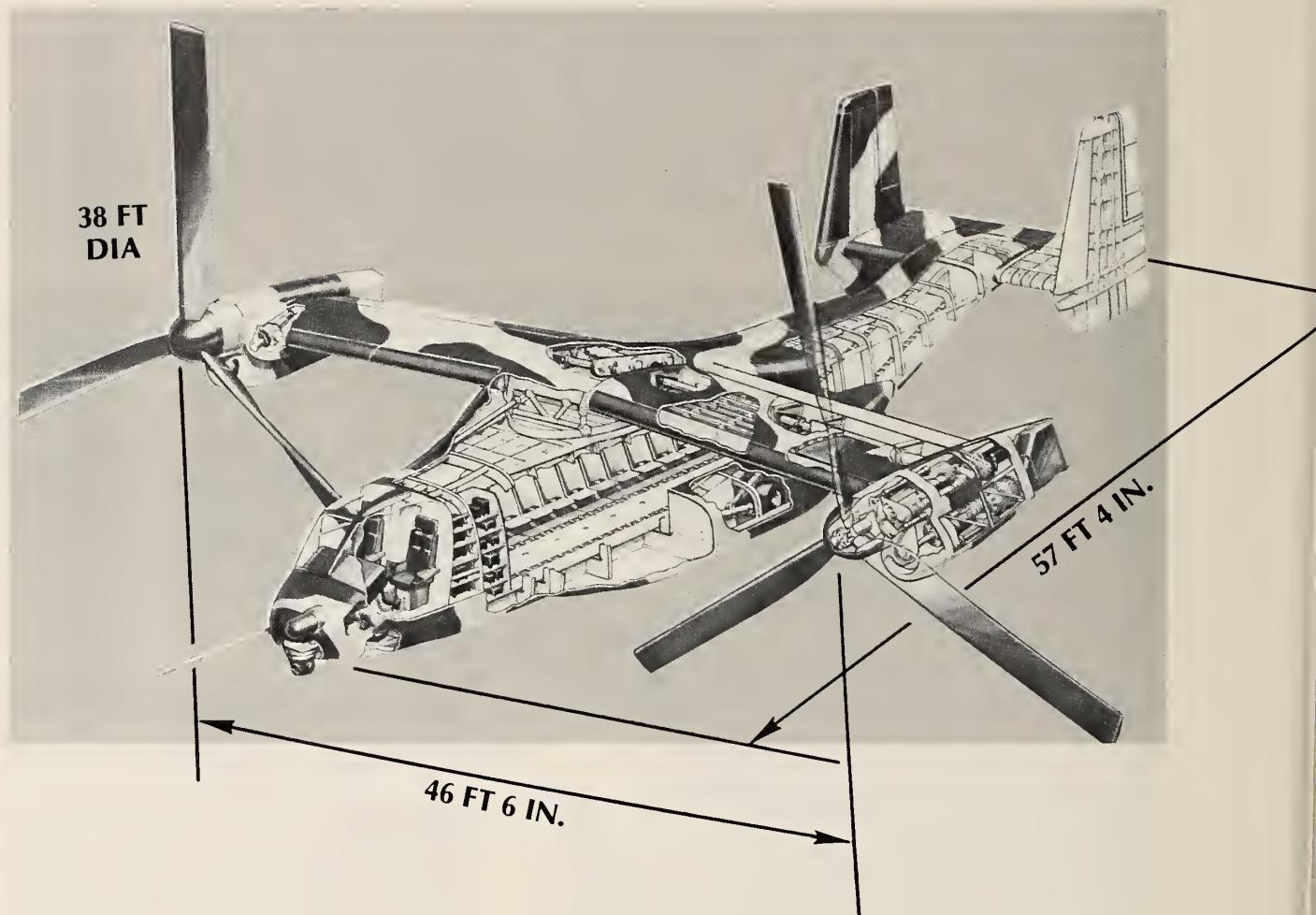
<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	44	-	22	12	-	-	-

WHY IS IT IMPORTANT? The AH-1W is a Marine Corps attack helicopter and it fulfills the requirement to provide enroute protection for our assault helicopters and their embarked forces. Further mission requirements include close-in fire support for landed troops and point destruction of enemy armor. Due to the versatility of the Sea Cobra, the AH-1 community remains heavily committed.

PROGRAM STATUS: AH-1W procurement to date signify the initial step in the modernization of the Marine Corps' attack helicopter force. FY 88/89 procurement will enable the Marine Corps to meet existing inventory shortfalls.

DEVELOPER/MANUFACTURER: Bell Helicopter

V-22A "OSPREY"



DESCRIPTION: The V-22A is an advanced combat assault aircraft procurement program managed by the Navy for joint service application. The V-22A is a tilt-rotor aircraft combining the efficient flight characteristics of a modern turbo-prop aircraft with the vertical take off and landing capabilities of a conventional helicopter. The Osprey will cruise at 250 knots and with a ferry range of 2,100 nautical miles it will be capable of self-deploying worldwide without aerial refueling, enhancing its role for all services. The V-22A program provides an aircraft to meet the amphibious/vertical medium assault support needs of the Marine Corps; the combat search and rescue, special warfare and fleet logistics support needs of the Navy; the special operations needs of the Air Force; and the aeromedical evacuation, combat transport of troops and supplies, combat search and rescue, and special operations needs of the Army. The present total procurement quantity of 913 aircraft provides 552 for the Marine Corps, 50 for the Navy, 80 for the Air Force and 231 for the Army. The Navy is also studying procurement of an additional 300 aircraft for use in antisubmarine warfare.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity

USMC - MV-22A	12	45	53
USN		8	
USA		8	
USAF (6 in FY-93)			
(DOD TOTAL)	12	45	69

WHY IS IT IMPORTANT? The existing inventory of medium assault helicopters is declining due to normal attrition. The inventory is costly to operate and maintain due to aging. To meet the OTH mission objectives for the 1990s and beyond, replacement aircraft with significantly increased capabilities (to include self-deployability) are required starting in 1991 to avert a critical shortfall in medium assault lift capability.

PROGRAM STATUS: The Osprey program has an acquisition strategy which is paced by the Marine Corps' urgent need for fleet deliveries during 1991. The program is a vital component of the modernization of Marine aviation. Of the 126 aircraft procured through FY-92, 110 are USMC configured.

DEVELOPER/MANUFACTURER: Bell Helicopter Textron and Boeing Vertol

F-21A "KFIR"

DESCRIPTION: The F-21A is a single-engine, single-pilot, supersonic Israeli fighter aircraft. The Navy has leased 12 F-21As and expects to lease an additional 13 for the Marine Corps during FY-87 to simulate Soviet fighters. The aircraft is limited to 710 knots below 25,000 feet and to 750 knots or Mach 2.2 above that altitude. The KFIR can out-accelerate most fighters to disengage.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	1	13	-	-	-	-	-
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WHY IS IT IMPORTANT? A Marine Corps Reserve adversary squadron equipped with 13 Kfir contractor-supported aircraft is required to provide air combat maneuvering (ACM) training. The mission of Marine Fighter Training Squadron-401 (VMFT-401) is to provide ground and air instruction in aerial combat tactics. VMFT-401 has an active duty commanding officer, eight reserve FTS pilots, 15 FTS enlisted, and 10 SMCR pilots. The squadron is located at MCAS Yuma, Arizona.

PROGRAM STATUS: VMFT-401 is scheduled to begin flight operations in early 1987.

DEVELOPER/MANUFACTURER: Israel Aircraft Industries

### KC-130T

DESCRIPTION: The KC-130T is a multi-engine, land-based tanker aircraft which satisfies the Marine Corps tactical aerial refueling requirement for both fixed and helicopter aircraft. A more reliable and maintainable aircraft in comparison with its predecessors, the KC-130T is the newest model of the venerable KC-130 series and boasts state of the art avionics, as well as a pylon mounted fuel capacity of an additional 2,720 gallons of fuel. The impressive performance of the KC-130T in expeditionary and unimproved airfields underscores the importance of this aircraft to the support of Marine forces.



<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	10	-	-	-	-	-	-

WHY IS IT IMPORTANT? In support of amphibious operations and subsequent operations ashore, tactical tankers provide an effective intra-theater force multiplier capability for fighter aircraft and extend the range and endurance of a variety of tactical aircraft in support of ground operations. This aerial refueling mission has been well served by the KC-130 series for decades. The incorporation of an aerial refueling capability in the current CH-53E and the future MV-22A place increasing demands on existing aerial refueling capabilities. The modernization of the Marine Corps Reserve aerial refueling forces serves to ensure the capability and quantity remain sufficient to meet its tactical refueling requirements while maintaining aircraft standardization in the force.

PROGRAM STATUS: The reserve KC-130T force modernization continues to be supported annually in Congress.

DEVELOPER/MANUFACTURER: Lockheed Aircraft Corporation

### LASER MAVERICK AGM-65E

DESCRIPTION: Laser Maverick is a short-range, laser-guided, air-to-surface missile for close air support. Laser Maverick consists of a semi-active laser seeker, a 300-pound penetrating blast/fragmentation warhead with cockpit selectable fuze, and a rocket motor with an out-of-line ignition device to satisfy shipboard safety requirements. The warhead, fuze, rocket motor and launcher are common to the Navy's infrared (IR) attack weapons.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	2,375	1,500	1,291	-	-	-	-	-
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WHY IS IT IMPORTANT? Laser Maverick is the only weapon under development that satisfies the long-standing Marine requirement for a standoff guided missile for use by aircraft in close air support. The large (300 pound) warhead and terminal laser guidance give the ground commander the ability to positively identify and destroy a broad spectrum of targets, ranging from heavy armor to fortified bunkers. It can be loaded on the A-4M, AV-8B, F/A-18, and A-6E/F aircraft.

PROGRAM STATUS: A full production decision is expected in early 1987 and, if positive, fleet introduction will follow shortly thereafter.

DEVELOPER/MANUFACTURER: Hughes (primary)  
Rockwell (laser seeker)



## HELLFIRE

DESCRIPTION: Hellfire is the primary antitank weapon for the Army's AH-64. The 100 pound missile will have a semiactive laser terminal homing seeker. Presently entering production with the Army, the Marine Corps will adapt the missile for use on the AH-1J and AH-1W Sea Cobra attack helicopters.



<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	1,961	-	1,393	1,410	1,769	2,410	2,992

WHY IS IT IMPORTANT? The employment of Hellfire is essential to the survivability of the Marine Corps' AH-1 helicopter on the nonpermissive threat battlefield. Hellfire provides an increased standoff capability combined with a considerably improved kill potential over present antitank guided missiles. Hellfire's range of greater than 5,000 meters significantly exceeds TOW's maximum range of 3,750 meters. With the indirect fire and lock on after launch firing modes, Hellfire does not expose the launch aircraft to the enemy during the missile launch and guidance sequence as TOW presently does. Finally, Hellfire's armor penetration/kill potential is greater than that of TOW.

PROGRAM STATUS: The Hellfire missile program recently completed Milestone IIIB and initial deliveries of production missiles have been made to the FMF.

DEVELOPER/MANUFACTURER: Rockwell International/Martin Marietta

## SIDEARM

DESCRIPTION: Sidearm is a short-range, self-protection, antiradiation weapon designed for use by TACAIR and armed helicopters to counter short-range air defense systems. The weapon is designed to acquire and track mobile battlefield type threat systems. The Sidearm program is a Navy development to modify AIM-9C semi-active radar Sidewinder seekers to detect and home on radar emitters. The concept involves using on-board aircraft defensive electronic counter measures (DECM) equipment to provide threat detection and existing Sidewinder circuitry to provide missile lock-on/launch signals for the pilot. The missile hardware includes the modified seekers plus new AIM-9 missile components.

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	200	256	276	269	-	-	-

WHY IS IT IMPORTANT? The Marine Corps has an approved requirement for a quick reaction, short-range, antiradiation weapon which is compatible with Sidewinder-configured aircraft using on-board DECM equipment for threat detection. The mobile, short-range air defense systems represent a significant threat to TACAIR and attack helicopters on the modern battlefield. The SIDEARM, as a complement to the more sophisticated HARM weapon, will provide non-HARM equipped aircraft (AH-1, AV-8B and OV-10) with a point and shoot capability to suppress the close-in tactical threat.

PROGRAM STATUS: The Sidearm missile has recently completed initial operational testing (OT). Completion of the next phase of OT and fleet introduction is expected in late 1987.

DEVELOPER/MANUFACTURER: Motorola

HAWK



DESCRIPTION: Designed for particular effectiveness at low altitudes, Marine Corps' Hawk missile systems provide vital area defense against enemy air attack. The Hawk missile, which strikes at supersonic speed, is deadly against a full spectrum of hostile aircraft at all tactical speeds and altitudes. The system is mobile, helicopter-transportable, and designed to operate in an electronic countermeasures environment.

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity (Missiles)	2,960	430	525	526	533	534	-

WHY IS IT IMPORTANT? Hawk is the Marine Corps' most lethal ground-launched, surface-to-air missile system. It is the organic weapon of the light anti-aircraft missile (LAAM) battalion which is organized to provide ground-based air defense for the MAGTF.

PROGRAM STATUS: The Marine Corps has programmed sufficient Hawk equipment to field a LAAM battalion in each MAF (three firing batteries with four firing sections each). The Marine Corps supports procurement of sufficient numbers of Hawk missiles to ensure 60 days of supply.

DEVELOPER/MANUFACTURER: Raytheon Corporation

## STINGER

DESCRIPTION: Stinger is a man-portable, visually-aimed, shoulder-fired, surface-to-air defensive weapon system designed to counter the low altitude air threat. The weapon can engage jet and helicopter aircraft from all aspects, including head-on, to provide a true point defense capability. Stinger employs a passive infrared homing missile with an advanced guidance system which assures precision intercepts forward of the jet plume of high-speed aircraft. The Stinger system is designed to meet the air threat of the 1990s. It also incorporates an identification friend or foe (IFF) interrogator and advanced infrared counter-measures circuitry.



<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	4,741	1,385	3,067	3,115	1,853	1,793	-

WHY IS IT IMPORTANT? The man-portable Stinger weapon system is the first ground launched air defense capability ashore in the assault echelon of an amphibious operation. It is the organic weapon of the low altitude air defense (LAAD) battalion which is organized to deploy Stinger teams to provide close-in, low-altitude air defense for each element of the MAGTF.

PROGRAM STATUS: Air defense of the MAGTF, in particular the maneuvering combat elements, relies heavily on Stinger and its ability to destroy low altitude, fixed-wing aircraft and helicopters. The Marine Corps' goal is procurement of sufficient Stinger missiles to ensure 60 days of supply.

DEVELOPER/MANUFACTURER: General Dynamics

### LIGHTWEIGHT EARLY WARNING DETECTION DEVICE (LEWDD)

DESCRIPTION: The Marine Corps requires a lightweight, man-portable, surveillance and detection device to alert and cue Stinger gunners to the approach of hostile aircraft. The Marine Corps will seek a non-developmental item such as one of many lightweight radars commercially available which are simple and robust with the following capabilities:

- All-weather 20 kilometer coverage
- Man-portable subassemblies with a total combined weight of 200 pounds or less
- Vehicle or battery powered
- Setup time of five minutes or less

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	12	36	20	-
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WHY IS IT IMPORTANT? Stinger, while highly effective, is limited by the visual acuity of the gunner. LEWDD will correct this grave deficiency by allowing the detection of hostile aircraft beyond the eyesight of the Stinger gunner, thereby exploiting the inherent effectiveness of the Stinger missile itself.

PROGRAM STATUS: Demonstration of candidate systems is scheduled for the 2d quarter, 1987. The first system will be operational in 1990.

DEVELOPER/MANUFACTURER: TBD

### MISSILE DETECTION SYSTEM, AN/AAR-47

DESCRIPTION: The AN/AAR-47 equipment detects incoming missiles and provides an automatic signal for ejection of expendable countermeasures, thereby protecting the aircraft. Aircrew are also provided indications of threat direction via existing aircraft warning displays.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	164	162	150	42	-
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WHY IS IT IMPORTANT? The AN/AAR-47 provides the helicopter the necessary protection to operate in a hostile environment now populated by a wide variety of diverse infrared surface to air missiles.

PROGRAM STATUS: Sufficient AN/AAR-47 systems have been programmed to meet USMC helicopter requirements. The applicability of the AN/AAR-47 for high performance fixed-wing aircraft is presently under evaluation.

DEVELOPER/MANUFACTURER: Honeywell

TACTICAL AIR OPERATIONS MODULE (TAOM), AN/TYQ-23 V(I)



DESCRIPTION: The TAOM is a joint Marine Corps/Air Force program designed to develop and produce operations modules which, when employed independently or in groups of up to five, provide for air defense and air traffic control and coordination as required by the MAGTF during combat operations.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	2	5	9	8	13	10	4
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WHY IS IT IMPORTANT? The TAOM program will replace aging equipment which is logistically unsupportable. The equipment developed is modular. This design allows for the phased introduction of capability into an operating area, and a rapid increase in capability with the addition of identical modules. The TAOM program is essential to the USMC deployment concept. TAOM requires fewer technical personnel to operate than the current system. It also offers training improvements at a reasonable cost and a reduction in the strategic lift requirement. Availability is increased due to improved system reliability and ease of repair. The modules will have the operational capabilities to perform the required functions on the modern battlefield. The procurement profile will provide modules required to equip each Marine air control squadron with four modules to support training.

PROGRAM STATUS: The Marine Corps requested the TAOM in the FY-86 budget. Milestone IIIA was passed in December 1986. An IOC of FY-91 is planned.

DEVELOPER/MANUFACTURER: Litton Corporation

AVIATOR'S NIGHT VISION IMAGING SYSTEM (ANVIS), AN/AVS-6

DESCRIPTION: ANVIS provides a third-generation image intensifier designed specifically for aviators. The system provides lightweight design, "look-around" peripheral vision, easy installation, and it enhances safe aircraft operation during night operations under clear, starlight conditions.

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	1,710	539	585	699	-	-	-

WHY IS IT IMPORTANT? ANVIS is the first night vision system designed specifically for providing helicopter aviation the capability to fly low with the ability to see and avoid obstacles. This provides a significantly increased capability for night operations in a hostile environment without the necessity for external light sources.

PROGRAM STATUS: Fleet introduction began in 1986. Full fleet capability is expected by 1990.

DEVELOPER/MANUFACTURER: Varian/ITT/VARO/Hughes



### ADVANCED TACTICAL AIR COMMAND CENTRAL (ATACC)

DESCRIPTION: ATACC replaces the current TACC equipment with highly mobile shelters containing non-developmental operator consoles, large screen electronic displays, communications terminals, and automated planner work stations.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	1	-	3	3
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WHY IS IT IMPORTANT? The Tactical Air Command Center is the senior C<sup>2</sup> facility responsible for overall command and control of all air support and air defense operations within the MAGTF. It is the tactical air commander's command post and will replace obsolete, immobile, unsupportable equipment which no longer supports the MAGTF employment concept.

PROGRAM STATUS: The system has completed Milestones I and II. FSD will begin in FY-87.

DEVELOPER/MANUFACTURER: TBD

### IMPROVED DIRECT AIR SUPPORT CENTRAL (IDASC)

DESCRIPTION: The IDASC is a low-risk, streamlined acquisition program which integrates non-developmental equipment such as shelters, communications terminals, status/display boards and crew work stations into a self-contained, highly mobile tactical C<sup>2</sup> facility.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	5	5	-	-	-	-
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WHY IS IT IMPORTANT? The Direct Air Support Center is the C<sup>2</sup> facility responsible for the conduct of tactical air support control of assault support and close air support operations. Its primary mission is the coordination of these aircraft with other supporting arms. The IDASC will replace equipment which is antiquated, unsupportable, and a maintenance burden.

PROGRAM STATUS: System is in FSD with a production decision expected in early 1987.

DEVELOPER/MANUFACTURER: SCI Technologies

## JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)

DESCRIPTION: JTIDS will provide users with secure, jam-resistant, voice and data communications capabilities. When integrated into a host tactical data system, JTIDS will support high-capacity, near-real-time exchange of tactical information and inherent relative navigation, position location, and identification capabilities. The Air Force is developing terminals based on the basic JTIDS technology, Time Division Multiple Access (TDMA). Associated with the implementation and employment of JTIDS is the parallel development of Tactical Digital Information Link-J (TADIL-J), a message standard being developed by the Joint Interoperability Tactical Command and Control System (JINTACCS) program.

PROCUREMENT PROFILE: TBD

WHY IS IT IMPORTANT? Current data communications capabilities supporting tactical command and control information exchange are vulnerable to exploitation and interception and are severely degraded when employed in a jamming environment. JTIDS and TADIL-J will overcome these deficiencies and provide tactical decision makers with survivable, secure, high capacity communications capabilities in support of internal, joint and combined command and control information exchange requirements. If the JTIDS program is not supported, the joint interoperability capabilities of the Marine Corps and a significant internal data distribution capability will continue to rely on outdated and highly vulnerable systems.

PROGRAM STATUS: The Marine Corps fully supports the expeditious achievement of a joint TADIL-J interface capability. The Marine Corps JTIDS/TADIL-J program is designed as a comprehensive effort to provide tactical commanders across the battlefield with jam-resistant, high capacity, voice and data communications. While the primary emphasis necessarily focuses on the TAOM implementation effort, follow-on platform implementations and Marine Corps-unique development efforts cannot arbitrarily be deferred without degrading the total capabilities of the integrated Marine Corps command and control system.

DEVELOPER/MANUFACTURER: TDMA: Singer-Kearfott  
DTDMA: Hughes Aircraft Corporation

### Part 3

#### Combat Service Support Element

##### Introduction

The CSSE is a task organization tailored to provide that combat service support to the MAGTF which is beyond the organic capability of the GCE and ACE. Depending on the assigned mission, it is task-organized to provide any or all of the following functions: supply, maintenance, engineer, medical/dental, automated data processing, materiel handling equipment, personal services, food services, transportation, military police, disbursing and financial management. It is capable, to a limited extent, of providing smaller task organizations such as maintenance/supply contact teams for support of MAGTF operations as required.

The most comprehensive of the programs is the FLS. The Marine Corps FLS is an integrated program which provides intensive life cycle management of selected combat service support equipment to assure success in amphibious operations, while exploiting the benefits of containerization. The system is designed around international dimensional standards in order to be able to use all modes of transportation, especially the container-capable merchant fleet. Major subsystems of FLS are general supply, motor transport, engineer and service support equipment. The goals of the system are to reduce manpower; to lower equipment acquisition, logistics support costs and shipping space requirements; and to decrease training needs while enhancing the effectiveness of the logistics support system and the readiness posture of Marine Corps amphibious forces.

In addition to FLS, the Marine Corps has other programs designed to improve the Marine Corps' capability to provide logistics support to the MAGTF commanders. A discussion of the most important of these programs follows.



### Ground Ammunition Program

The Marine Corps' FY-88 ground ammunition budget request totals \$410.9 million. The FY-88 program is broken down by ammunition category as follows:

<u>Item</u>	<u>Funding Request (\$ Millions)</u>	
	<u>FY-88</u>	<u>FY-89</u>
155 mm Artillery	68.7	56.2
Tank (M1)	36.8	64.8
Mortar	122.8	76.0
Small Arms	32.7	23.9
Other/ 1/	149.9	182.7
<u>Total</u>	<u>\$410.9</u>	<u>\$403.6</u>

1/ Includes pyrotechnics, grenades, training-unique ammunition, etc.

In keeping with DOD guidance, the Marine Corps program stresses readiness and sustainability. The current program allows for a significant increase in our inventory as well as adequate levels of training ammunition to allow sufficient practice rounds to maintain readiness.

The M1A1 tank line consists of 120mm ammunition. The 120mm ammunition system consists of kinetic energy (KE) M829 APFSDS-T and high explosive antitank (HEAT) M830 HEAT-MP-T rounds. The high specific energy on target enables the KE round to penetrate even the most resistive armor targets. The warhead has an additional defeat capability against lightly armored or soft targets. Each of the two rounds has its own target practice rounds, TP-T M831 and TPCSDS-T M865.

The mortar line consists of the 60mm illum and smoke WP rounds for the M224 LWCMS. This will complete the family of rounds for the M224 mortar system.

The highlights of the artillery ammunition request are shown below:

#### Artillery Ammunition

<u>Item</u>	<u>Quantity</u>		<u>\$ Millions</u>	
	<u>FY-88</u>	<u>FY-89</u>	<u>FY-88</u>	<u>FY-89</u>
155mm chg prop WB	187,631	181,698	13.0	13.0
155mm ADAM-long	435	1,147	2.0	5.4
155mm ADAM-short	435	1,355	2.0	6.4
155mm RAAM-long	10,633	4,355	14.7	6.2
155mm RAAM-short	25,338	9,945	35.0	14.2
155mm HEDP (ICM)	4,517	10,991	2.0	5.1
155mm chg prop RB	-	13,218	-	5.9
<u>Total</u>			<u>68.7</u>	<u>56.2</u>

Much of the currently programmed ammunition procurement is tied to the acquisition and fielding of new weapon systems. This fact is demonstrated below:

<u>Item</u>	<u>New System</u>	<u>Quantity</u>		<u>\$ Millions</u>	
		<u>FY-88</u>	<u>FY-89</u>	<u>FY-88</u>	<u>FY-89</u>
60mm Illum	LWCMS	24,413	66,247	4.0	10.7
60mm SMK WP	LWCMS	38,607	28,949	4.1	3.1
120mm TP-T	M1A1 tank	4,589	18,588	4.3	16.9
120mm TPCSDS-T	M1A1 tank	4,040	16,627	2.5	10.0
120mm APFSDS-T	M1A1 tank	6,890	13,405	7.8	14.8
120mm HEAT-MP-T	M1A1 tank	17,231	30,199	30.0	50.0
RKT 83mm HEAA	SMAW	4,089	8,124	2.3	23.6
RKT 83mm HEAA (Practice)	SMAW	682	1,420	1.1	2.3
RKT 84mm AT-4		16,212	17,728	13.0	12.3
Total				\$69.1	\$143.7

Viewed as an essential element of a balanced program, the FY 88/89 ground ammunition request complements the overall Marine Corps program and ensures operational readiness. The FY-88 budget request will procure an additional 12.4 days of ammunition, the FY-89 extends this an additional 4.6 days which meets Marine Corps unit of measure for sustainability in this area. The FY-88 request will increase our present inventory to approximately 58 days of ammunition, while the FY-89 dollars raise the inventory to 62.6 days of ammunition. In FY-88 the Marine Corps begins the procurement of mobilization ammunition to support the rapid expansion of the Corps if necessary.

#### REVERSE OSMOSIS WATER PURIFICATION UNIT (ROWPU)--ENHANCED

DESCRIPTION: The enhanced ROWPU is a self-contained unit, ISO-configured in an 8' X 8' X 10' shipping frame. These are the same transport dimensions as the present 600 gallons per hour (gph) ROWPU.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	-	-	-	50
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WHY IS IT IMPORTANT? The enhanced ROWPU is designed to produce potable water for the FMF from salt, brackish, and fresh water sources at the following rates: 1,200 gph from salt water; 1,800 gph from brackish water; and 3,600 gph from a freshwater source. The enhanced ROWPU will replace the current 600 gph unit on a one-for-two basis, substantially reducing quantities, cube and square.

PROGRAM STATUS: The FSED contracts for prototypes from two manufacturers are to be awarded in the 1st quarter FY-88. Hardware deliveries will follow a year later. The developmental and operational testing (DT/OT II) will be complete in time for a Milestone III decision in the 2d quarter FY-90.

MANUFACTURER: TBD

## LOGISTICS VEHICLE SYSTEM (LVS)



DESCRIPTION: The LVS consists of a front diesel-powered unit and four interchangeable rear units. It has eight-wheel drive and an automatic transmission. It is articulated, has a 60-inch fording capability without fording kit, weighs 26,000 pounds and has 85 percent commonality with the Army's Heavy Expanded Mobility Tactical Truck (HEMTT).

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	1,029	1,113	359	-	-	-	-

WHY IS IT IMPORTANT? The LVS is a family of combat support vehicles designed to replace overage, oversize, diverse and T/E deficient items with a tractor and four interchangeable rear body units (container and cargo trailers, recovery trailer unit and fifth wheel). LVS is air-transportable and its dimensional standardization permits container ship transport. LVS' design features provide enhanced cross-country mobility required to move weapon systems and logistics support for operating forces.

PROGRAM STATUS: Initial fielding occurred in August 1985. IOC was achieved in September 1986. Currently an R&D effort by industry is ongoing to provide a self-loading/unloading version of the container hauler variant (MK14) of the LVS.

DEVELOPER/MANUFACTURER: Oshkosh Truck Corporation

CONTAINER HANDLER, ALL PURPOSE (CHAP)

DESCRIPTION: The CHAP is a lightweight materiel handling equipment capable of handling International Organization for Standardization (ISO) compatible containers and shelters up to 8' X 9' X 40' in landing craft, amphibious shipping and RO/RO vessels. It will be capable of transporting 68,000 pound containers at the surf line, over the beach and on improved roads, at speeds of 15 mph loaded and 30 mph unloaded. It will stack containers two high and will be capable of operation by a single operator.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	-	-	50	100
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WHY IS IT IMPORTANT? The increasing logistical demands of the highly maneuverable, increasingly mechanized MAGTF are being met by the containerization of ammunition, food and general supplies. Sustainment of the MAGTF ashore is critically dependent on throughput of containerized cargo. Current capability is marginally adequate, but manpower intensive and relatively slow. Current technology will permit the development of a one-man operated, self-propelled, all-terrain machine capable of replacing both the Rough Terrain Container Handler (RTCH) and the Lightweight Amphibious Container Handler (LACH).

PROGRAM STATUS: The CHAP is in the exploratory development phase and will transition to demonstration/validation in FY-88. Initial procurement is scheduled for FY-91.

DEVELOPER/MANUFACTURER: TBD

### TRAILER LAUNCHED BRIDGE (TLB)

DESCRIPTION: The Trailer Launched Bridge (TLB) is a military load class (MLC) 70 bridge, capable of spanning gaps up to 22 meters wide. It is a hydraulically powered, double-folded scissors-type bridge, carried and deployed by a trailer/launcher and usable in either combat or CSS roles.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	-	25	-	-
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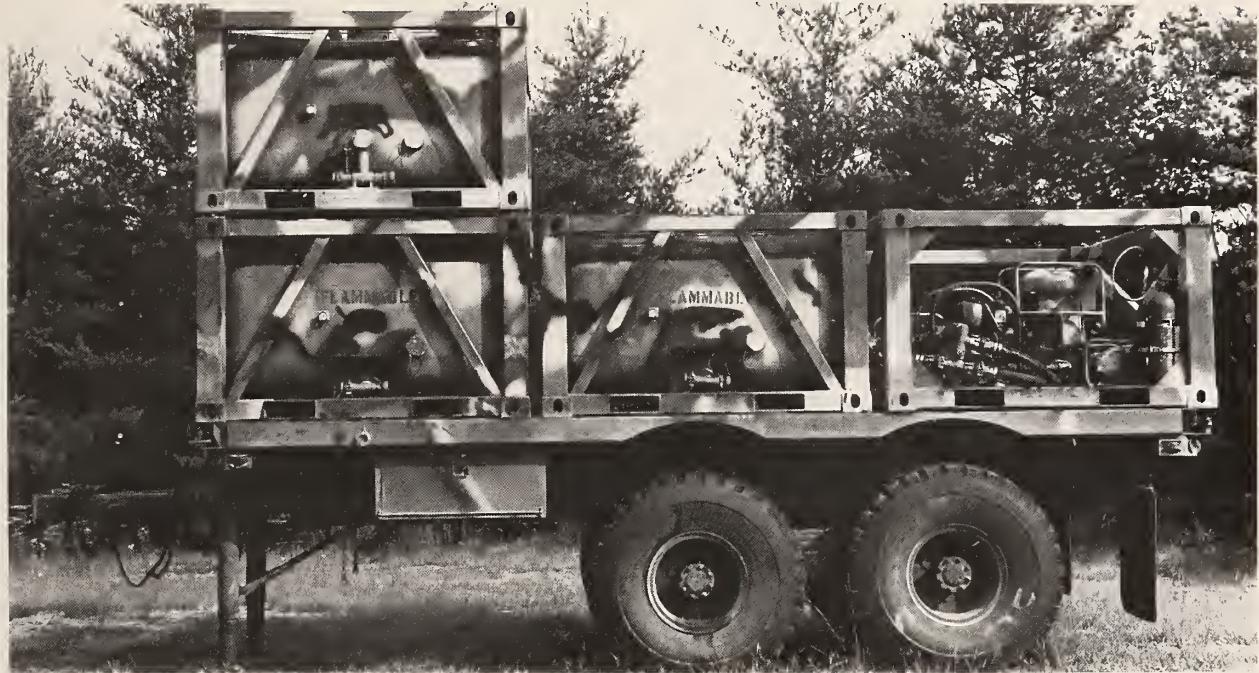
WHY IS IT IMPORTANT? Current USMC bridging is CSS-oriented. With the advent of the Armored Vehicle Launched Bridge (AVLB), the leading edge of the GCE will have dedicated, rapidly employable assault bridging for the first time. The hand-erected Medium Girder Bridge (MGB) cannot fully support MAGTF maneuverability requirements. The TLB will complement both the MGB and the AVLB and will provide in-depth bridging capability throughout the objective area.

PROGRAM STATUS: The TLB is in full scale development with DT II scheduled to start in the 1st quarter FY-87.

MANUFACTURER: TBD



## FUEL/WATER STORAGE AND PUMP MODULES (SIXCONS)



DESCRIPTION: SIXCONS provide the capability to store and transport up to 900 gallons of liquid in a single module. The SIXCON pump module provides the capability to pump fuel or water from SIXCON storage modules at a rate of 125 gallons per minute. Each module has forklift tineways on all sides and can be helolifted or transported on trucks or containerships. With the advent of these modules comes a greatly increased capability and flexibility. Both fuel and water can be transported to forward elements of a MAGTF in variable quantities by the most effective means available on land or by air.

PROCUREMENT PROFILE: PRIOR    FY-87    FY-88    FY-89    FY-90    FY-91    FY-92

Quantity

		F	W	F	W	F	W	F	W
FUEL/WATER STORAGE	536/625	196/325		507/188		370/	-	300/	-
FUEL/WATER PUMP	252/402		100/	-	201/	-	-	-	-

WHY IS IT IMPORTANT? The SIXCON modules were designed and are expected to fill the void left by the reduction in specialized tankers (M49/M50). The SIXCONS can be used individually or in combination of up to six modules (5 storage and 1 pump). They can be connected so that six modules form an 8' X 8' X 20' container.

PROGRAM STATUS: The first contract award was in 1985. Water storage modules are loaded on MPS. The first fielding is expected in July 1987, once provisioning is complete.

DEVELOPER/MANUFACTURER: Isometrics, Peabody-Barnes

## HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV)



**DESCRIPTION:** The HMMWV is a multipurpose 5/4-ton high mobility vehicle that is equipped with 4-wheel drive. There are six HMMWV variants: the TOW carrier, augment carrier, cargo/troop carrier, two-litter ambulance, four-litter ambulance and the shelter carrier. It has a common chassis, a diesel engine, and automatic transmission.

**PROCUREMENT PROFILE:** PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	15,339	743	136	-	-	280	192
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**WHY IS IT IMPORTANT?** The HMMWV is the primary tactical vehicle for combat and combat support units. Its primary functions are troop and weapon transport support, weapons platform, reconnaissance, fire support, medical evacuation, and command, control and communication applications. This vehicle will have a 5/4-ton capacity and will replace all current 1/4-, 1/2-, 3/4-, and 5/4-ton trucks and 1/4-ton trailers. The common engine chassis and automatic transmission will reduce the logistic burden and standardize operational/maintenance requirements.

**PROGRAM STATUS:** IOC was attained in July 1986. The replacement program for the initial vehicles will begin in FY-91 using an Army contract.

**DEVELOPER/MANUFACTURER:** AM General

## ELECTRONIC MAINTENANCE COMPLEX (EMC)

DESCRIPTION: The EMC is comprised of an ISO shelter and easily relocatable internal furnishings and appointments (work benches, desks, storage racks, etc.) and service and utility items (electrical power entry panel, control and distribution; lighting; etc.). A single shelter provides an electronics maintenance facility. Shelters may be joined together to meet mission requirements. A single maintenance complex may include four shelters.



<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	45	16	-	14	8	7	14

WHY IS IT IMPORTANT? To successfully counter predicted threats, the Marine Corps must be capable of rapid response, organized and tailored to general or specific mission needs. The success of combat operations at any level of intensity is directly dependent upon the degree of efficiency and effectiveness of the operational logistic support provided. The ability to communicate, maneuver and coordinate/direct fire can only be assured if the sophisticated weapons and equipment employed by the FMF receive timely and efficient maintenance support. A major consideration in this area is the availability of adequate facilities for maintenance of electronic systems and components. Facilities are required which provide working space, internal appointments, environmental conditioning, and protection for the complete range of activities required for electronic maintenance. The mounted EMC is depicted in the bottom picture.

PROGRAM STATUS: IOC for EMC is scheduled for FY-89. The Marine Corps projects a total of 1,050 EMC suites.

MANUFACTURER/DEVELOPER: Gichner Mobile Systems/Marine Corps  
Brunswick Systems/Marine Corps



MARINE CORPS AUTOMATED TEST EQUIPMENT SYSTEM (MCATES)

DESCRIPTION: MCATES incorporates the necessary equipment, computer programs and associated documentation to enable automatic/semiautomatic testing and fault diagnosis of electronic assemblies and subassemblies. In addition, MCATES provides for Test Program Sets (TPSs) development, verification/validation testing, revision/update and management procedures. MCATES is comprised of two functional groups. The first group consists of the test head, instrument controller and associated General Purpose Electronic Test Equipment (GPETE), located at all intermediate level maintenance activities. The second group is the Test Program Set Development System (TPSDS), located at the Depot Maintenance Activity, MCLB, Albany, Georgia. The key elements in the second group are a central host computer, digital test program generator, TPS programming stations, documentation stations, configuration management stations, and verification/validation stations.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	24	34	-	113	25	-	-
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WHY IS IT IMPORTANT? To successfully counter predicted threats, the Marine Corps must be capable of rapid response, organized and tailored to general or specific mission needs. The ability to communicate, maneuver, coordinate and direct fire on the enemy can only be assured if the sophisticated weapons and equipment employed by the FMF receive timely and efficient maintenance support.

PROGRAM STATUS: A contract was awarded in August 1986 for the manufacture of programmable test sets. The Marine Corps will field the Analog Printed Test Set (APTS) in March 1987. IOC for MCATES hybrid test station is scheduled for FY-88.

MANUFACTURER/DEVELOPER: Various/Marine Corps

## CHAPTER IV

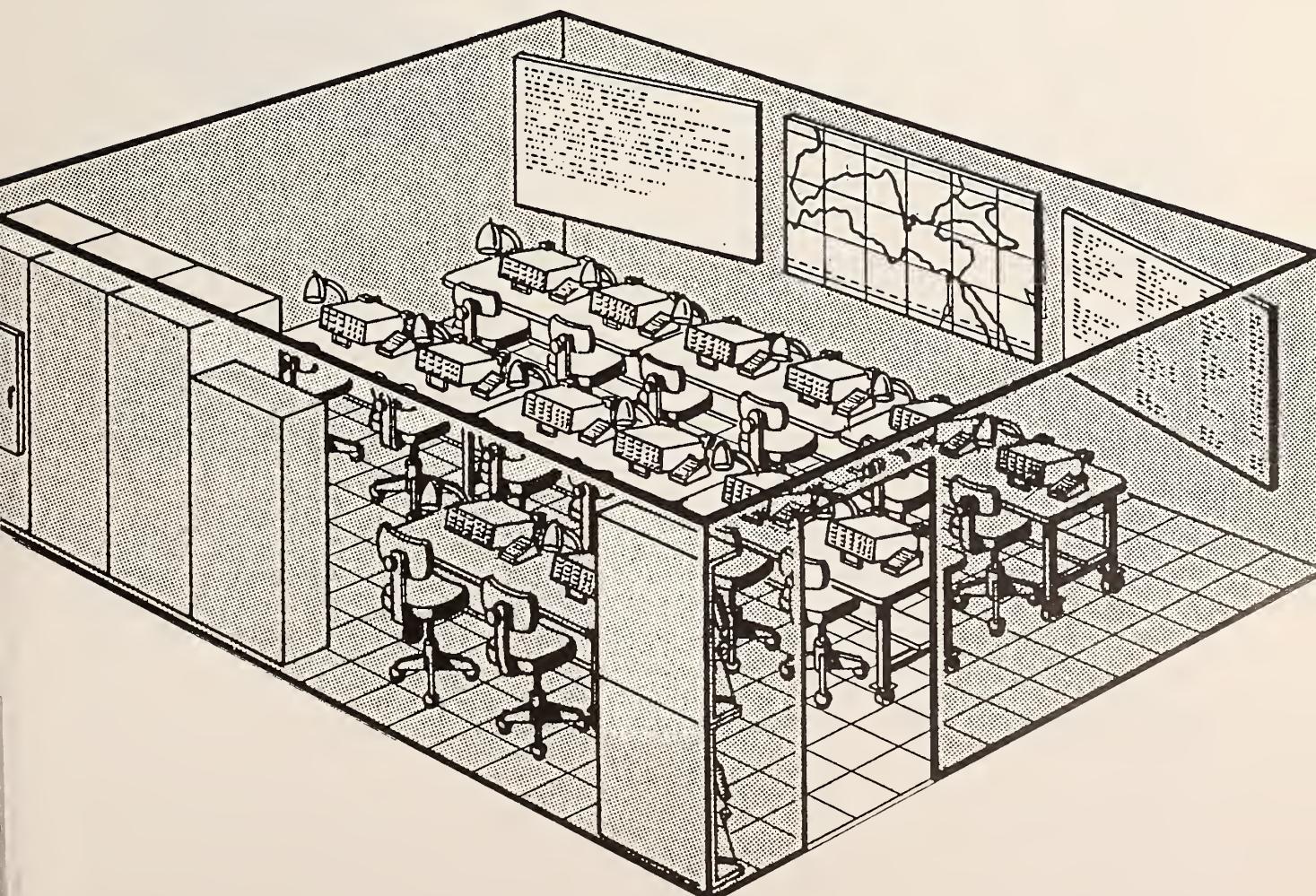
### C<sup>4</sup> AND INTELLIGENCE

#### Part 1

##### Command, Control, Communications and Computer (C<sup>4</sup>) Systems

###### Introduction

This section outlines command, control, communications and computer (C<sup>4</sup>) systems intended to enhance the Marine Corps' capability to perform its assigned missions. The Marine Air-Ground Task Force (MAGTF) has a unique C<sup>4</sup> capability. MAGTFs are organized, equipped and trained under the concept of unity of command, providing the commander complete control over all elements of the MAGTF. The MAGTF is equipped with the capability to provide austere external communications links with the Naval Telecommunications System (NTS), Defense Communications System (DCS) and with adjacent U.S. or allied units.



## POSITION LOCATION REPORTING SYSTEM (PLRS)

DESCRIPTION: PLRS is a joint USA-USMC Program. A PLRS system network consists of a master station housed in a mobile shelter, a duplicate alternate master station and up to 370 basic user units, which may be man-, vehicle-, or aircraft-transportable. The master station consists of standard military computers and a tactical display. The handheld user readout device displays position and navigation information or limited free text messages. PLRS is crypto secure and jam resistant and will significantly enhance commanders' versatility in tactical operations by providing accurate (15 meter circular error probable (CEP) for ground users, 100 meter CEP for air) position location of friendly units. Small units, vehicles and aircraft will be able to rapidly determine their positions, as well as those of other PLRS-equipped units during periods of reduced visibility and in featureless terrain. The master station automatically reports position location information throughout the PLRS network.



Man-Pack Basic Unit

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity (Systems)	6	-	-	2	4	-	-

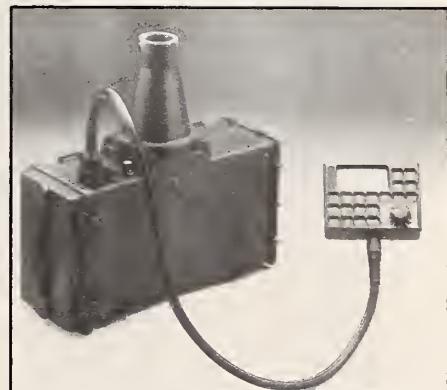
WHY IS IT IMPORTANT? With the capabilities provided by PLRS, commanders at all levels will be afforded improved maneuver capabilities for their forces and provided more accurate and timely fire and air support to all user-equipped units.

PROGRAM STATUS: With the Army as lead service, an initial sole-source, 4-year contract for the purchase of 11 1/2 systems (6 for the Marine Corps and 5 1/2 for the Army) was awarded on 29 July 1983. The Marine Corps total inventory objective is 13 systems (3 per MAF and 1 for software support and training). A second competitive contract will be awarded in FY-89 to complete attainment of the inventory objective. IOC is planned for November 1987.

DEVELOPER/MANUFACTURER: Hughes Aircraft Company

## NAVSTAR GLOBAL POSITIONING SYSTEM (GPS)

DESCRIPTION: The NAVSTAR GPS is a space-based satellite navigation system that provides accurate three-dimensional position and navigation information worldwide. The Marine Corps plans to procure 276 man-pack user equipments, each weighing approximately 17 pounds, to be employed as a complementary system to PLRS. User equipment in USMC aircraft will be funded by the Navy.



<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	-	-	-	-	186	90	-

WHY IS IT IMPORTANT? The man-pack terminal will be used to anchor the PLRS and provide position location coverage outside the effective area of PLRS (47 Km X 47 Km). Man-pack terminals will also provide position and navigation capability to units operating at less than brigade strength such as a MAU or BLT, and will greatly facilitate command and control of units during amphibious operations.

PROGRAM STATUS: The Marine Corps continues to participate in development and procurement of man-pack terminals. IOC is expected in FY-91.

DEVELOPER/MANUFACTURER: Rockwell-Collins

MARINE INTEGRATED FIRE AND AIR SUPPORT SYSTEM (MIFASS)



DESCRIPTION: The MIFASS is a selectively automated tactical command, control and coordination system that provides for the coordination of mortars, artillery, naval gunfire and direct air support, to achieve more effective and responsive fire support for ground maneuver forces. MIFASS also will provide an automated capability for fire planning with associated weapons and target information management for infantry, aviation and artillery combat operation centers. It will distribute battlefield geometric information such as boundaries, coordination lines and areas, friendly unit locations and air defense data. MIFASS is designed so that selected components may be employed at all echelons of the MAGTF. It will be located at the MAGTF headquarters, the division, the infantry and artillery regiments, the infantry and artillery battalions, and the Direct Air Support Center of the Marine Air Support Squadron.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	LLF	1	1	1
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WHY IS IT IMPORTANT? Current manual operations in the coordination and control of supporting arms are slow and inefficient in providing fire support to maneuver elements. The manual operations are often characterized by mistakes, delays, and the improper use of available supporting arms. MIFASS will help to overcome these deficiencies by automating functions currently performed manually. MIFASS will assist the Marine Corps in maximizing its combat potential in the 1990s.

PROGRAM STATUS: The Marine Corps has developed an engineering model. IOC is planned for 1st quarter, FY-93.

DEVELOPER/MANUFACTURER: Norden Systems

## TACTICAL COMBAT OPERATIONS (TCO) SYSTEM

DESCRIPTION: The TCO system will provide semiautomated support to MAGTF commanders in the performance of their planning, operations and intelligence functions, down to the battalion and squadron level. TCO will be developed in evolutionary phases and will initially consist of computer software usable on existing, fielded equipment. The TCO system will interface with other elements of the Marine Corps command and control system.

PROCUREMENT PROFILE: TBD

WHY IS IT IMPORTANT? The post-1990 battlefield will be characterized by high mobility, sophisticated weaponry, unit dispersion and rapid speeds of advance. Technology, coupled with arms marketed by many nations, has provided potential adversaries throughout the world with advanced capabilities for rapid planning and execution of operational plans. Improved battlefield sensing and reporting capabilities have created an unprecedented increase in the volume and nature of information available to Marine commanders during operational planning and combat decision making. This increase has exceeded the capacity of current, predominantly manual, combat operations centers to process, filter, discriminate, correlate, organize and display essential information. The TCO system will exploit the benefits of automation to aid the commander in the performance of these functions in a timely manner.

PROGRAM STATUS: The Marine Corps is developing TCO in evolutionary increments designed to build upon current capabilities. The concept development phase will be completed in July 1987. Contingent upon a Milestone III decision, a TCO prototype will be constructed and tested during FY 88-90. The initial dissemination of software will take place at the end of CY-88. The software will be usable on microcomputers and will assist MAGTF commanders in the performance of their planning functions. A fully tactical TCO system will be fielded with an IOC of FY-90. Interoperability with other Marine Corps systems and with other service/NATO command and control systems will be emphasized. Subsequent software and hardware improvements will include combat simulation and artificial intelligence capabilities to further enhance the timely and effective performance of the planning, operational and combat intelligence functions of command by a MAGTF.

DEVELOPER/MANUFACTURER: TBD

DIGITAL COMMUNICATIONS TERMINAL (DCT), AN/PSC-2



DESCRIPTION: The DCT is a programmable, hand-held, input/output device that operates over tactical radio and wireline systems. The DCT is compatible with the BANCROFT and VINSON cryptographic systems. The device weighs 4.5 pounds and is 100 cubic inches. The DCT allows the operator to rapidly compose, edit, transmit, receive and display preformatted, free-text messages and graphic data. The DCT will expand the capabilities of the following systems systems with its speed and accuracy:

- Marine Integrated Fire and Air Support System (MIFASS)
- Tactical Combat Operations (TCO) System
- Direct Air Support Center (DASC)
- Command and Control Communications for Forward Area Air Defense (FAAD) Teams
- Tactical Warfare Simulation, Evaluation and Analysis Systems (TWSEAS)

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	1,200	260	581	873	-	-	-
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WHY IS IT IMPORTANT? The DCT represents a quantum improvement in speed, accuracy, and reliability of USMC tactical communications.

PROGRAM STATUS: IOC for this program is expected in FY-87. A follow-on procurement contract for FY 87-89 will be competitively awarded.

DEVELOPER/MANUFACTURER: Litton

## SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM (SINCGARS)



**DESCRIPTION:** The SINCGARS family of VHF radios will replace most VHF/FM manpack and mobile tactical radio communications currently in the Marine Corps. SINCGARS will provide antijam communications in the frequency range of 30.00 to 87.975 MHz with 25 KHz channel spacing. It is mission-flexible for voice or data, plain or cipher text and secure remote control operation. Using the combination of low, medium and high power selections, a frequency hopping electronic counter-counter measures (ECCM) capability, SINCGARS additionally features a low electronic signature to elude current enemy direction finding (DF) equipment.

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	-	-	-	-	6,308	6,400	8,300

**WHY IS IT IMPORTANT?** The Marine Corps is relying upon radio equipment which is over 20 years old and is difficult to support. The present VHF/FM radios are vulnerable to exploitation and interception and are severely degraded when operated in a jamming environment. SINCGARS will accommodate interoperability in joint and combined operations. The new model will offer optimum capability for secure voice communication with minimum weight.

**PROGRAM STATUS:** The Marine Corps plans to procure the embedded ComSec version of SINCGARS, an improved model of the current radio. Testing is scheduled for FY 89/90.

**MANUFACTURER:** ITT

## TACTICAL COMMUNICATIONS CENTER (TCC)

DESCRIPTION: The TCC is a semiautomatic (computer assisted) tactical message center to be used at Division, Wing, FSSG and MAF/MAB headquarters. It provides for the receipt, storage, routing, distribution, reproduction and transmission of general service record traffic within a command post and to lower, adjacent and higher headquarters. The TCC will terminate data/teletype circuits to AUTODIN, the Naval Telecommunications System, local (within the command post) teletypes or end-user computer terminals. It has the capacity to operate at selectable data rates of 75-2,400 bits per second.

The TCC consists of two major components; the AN/MSC-63A Communications Central and the Reproduction/Distribution Facility (R/DF). Each component can operate independently and is being developed and procured separately. Both components are housed in an 8' X 8' X 10' container. The AN/MSC-63A consists of off-the-shelf hardware items such as computers, video displays, teletypes, disk units, tape units, modems, and Communications Security equipment. The R/DF will contain two commercial reproduction machines, a safe, shredder and printer. The printer can be electronically connected to the AN/MSC-63A.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

### Quantity

R/DF	31	-	-	-	-	-	-
AN/MSC-63A	-	-	10	10	11	-	-

WHY IS IT IMPORTANT? Current tactical communications center equipment is over 20 years old and is slow, unreliable and increasingly difficult to maintain. It is heavy for amphibious operations, will not interface with emerging digital transmission systems and does not meet user throughput or maximum delay requirements for record traffic.

PROGRAM STATUS: The TCC program is on schedule and progressing smoothly toward the FY-88 procurement. IOC is scheduled for FY-90.

DEVELOPER: AN/MSC-63A - Naval Oceans Systems Center (NOSC)  
R/DF - Marine Corps Logistics Base, Albany

## HIGH FREQUENCY COMMUNICATIONS CENTRAL (HFCC), AN/TSC-120

DESCRIPTION: The HFCC is a shelter-contained high frequency communication central which will provide two channels of voice and/or data for long-haul communications. It will provide communications from the MAGTF to major subordinate elements, between dispersed units of the MAGTF ACE, and will serve as a backup to the satellite systems in joint and combined operations. The HFCC will be procured using a non-developmental approach to incorporate the most modern high frequency communication equipment available today.

### PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	30	34	35
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WHY IS IT IMPORTANT? The Marine Corps currently has limited capability to provide long-haul communications by any means other than satellite. Additionally, communications support for multiple and/or widely dispersed expeditionary airfields is dependent upon low-powered equipment. Thus, current operational capabilities are significantly constrained by the lack of reliable, long-haul communications centrals.

PROGRAM STATUS: Two contract awards for prototype systems are scheduled for the fall of 1987. After prototype evolution, a production contractor will be selected.

DEVELOPER/MANUFACTURER: TBD

## END USER COMPUTING EQUIPMENT (EUCE)

DESCRIPTION: The EUCE program will provide computer based equipment such as work stations, word processing equipment, and personal computers to personnel throughout the FMF, Supporting Establishment (SE) and SMCR. Commercial off-the-shelf hardware and software will be acquired to satisfy the needs identified during the requirements analysis. A standard EUCE configuration will be issued to FMF units as T/E equipment. Optional quantities and peripherals can be ordered separately.

### PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	3,000	4,000	4,000	4,000	-	-
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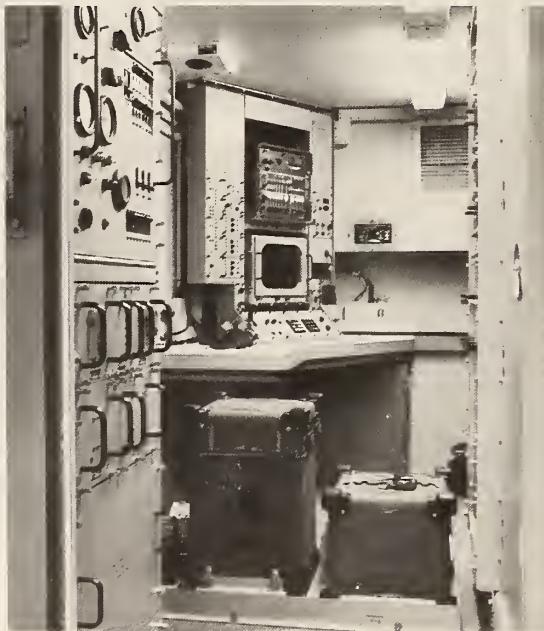
WHY IS IT IMPORTANT? The end user computing equipment that currently exists throughout the Marine Corps is nonstandard and incompatible. The majority of EUCE is carried as plant property and cannot be deployed. Additionally, the variety of systems that exist throughout the Marine Corps requires that personnel be retrained on different equipment when transferred to a new duty station. The EUCE program was developed to address these issues.

PROGRAM STATUS: The EUCE program is essential in order for the Marine Corps to realize productivity enhancement of personnel, standardization and compatibility of EUCE and software, and cost savings and benefits through the quantity purchase of standard items. IOC is targeted for August 1987.

DEVELOPER/MANUFACTURER: TBD

### UNIT LEVEL SWITCH (ULS)

DESCRIPTION: The ULS program is a family of switches being developed under the cognizance of the Joint Tactical Communications (TRI-TAC) Office with the Marine Corps as the lead service. The program includes the circuit switches, SB-3865 and AN/TTC-42, and the message switch, AN/GYC-7.



AN/TTC-42: A 150-line transportable, shelterized, automatic switching central. It will provide secure and non-secure digital and limited analog telephone service. It will be operational within major commands.

SB-3865: A team-transportable 30-line automatic telephone switching unit stackable to 90 lines that will service the new family of secure digital telephones. It will be used at regimental and higher levels within the FMF.



AN/GYC-7: The Unit Level Message Switch (ULMS) is a 12-line automatic tactical data switch providing secure switching of digital data. It will be configured into three two-man transportable packages and will be used at regiment and higher FMF levels.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity

AN/TTC-42	-	12	17	18	17	18	15
SB-3865	20	143	85	61	75	75	9
GYC-7	-	-	-	-	90	74	-

WHY IS IT IMPORTANT? The Marine Corps is transitioning from manual, analog, unsecure switch systems to one that has automatic, digital, cryptographically-secure capabilities. The ULS program will provide all of the next generation of USMC switches as well as interoperability in joint and allied operations.

PROGRAM STATUS: A production contract was awarded on 30 September 1986 for the AN/TTC-42 and SB-3865, with options for FY 87-89. AN/TTC-42 options are contingent upon successful completion of a limited operational test that was scheduled for February 1987. IOC for the ULMS is FY-90.

MANUFACTURER: ITT--DCD, Nutley, New Jersey

MAGTF AUTOMATED SERVICES CENTER (MASC)

DESCRIPTION: This program provides a capability for organic automatic data processing support for major MAGTF units when deployed. The MASC replacement is directed toward a capability to support new Information Systems (ISs) while deployed.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	3	6	4	-	-
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WHY IS IT IMPORTANT? Operation of Class I systems (standard ISs in use Marine Corps-wide) for deployed Marine Corps units must be supported by a deployable MASC, similar in function to the Automated Service Centers supporting non-FMF units. MASCs must have the capability to rapidly relocate to provide data processing support to deployed MAGTFs. MASCs depend upon the Marine Corps Central Design and Programming Activities (MCCDPAs) for programming and technical support. As the MCCDPAs transition to new operating systems and new ISs are implemented, support of the newer ISs will require an increased processing capacity.

PROGRAM STATUS: A working group comprised of FMF representatives, functional manager representatives, and C<sup>4</sup> personnel began work during September 1986 to review functional requirements of the deployed MAGTF commander. These functional requirements will be processed into a combat module designed to satisfy the deployed MAGTF commander's requirements. Accordingly, this combat module will be used to size and equip the MASC.

DEVELOPER/MANUFACTURER: It is anticipated that the automatic data processing equipment (ADPE) will be competitively acquired, while the trailers/vans will be acquired from the Army.

### TROPOSCATTER RADIO, AN/TRC-170(V)3

DESCRIPTION: The troposcatter radio will provide the capability for super high frequency (SHF) transmission and reception of both multichannel digital voice and data traffic. The AN/TRC-170(V)3 will be used at MAF, division and wing levels, providing intra-MAGTF communications, replacing the AN/TRC-97 and AN/GRC-201 radios. The AN/TRC-170 has troposcatter transmission capability for 32 channels of bulk-encrypted voice, record and data traffic.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	-	-	36	-
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WHY IS IT IMPORTANT? If the AN/TRC-170 is not procured, it will be necessary to retain the present AN/TRC-97 in service well beyond its service life. The AN/GRC-201 will not adequately accommodate the expected volume of traffic to be generated within an all-digital communication system. The new command and control equipment being procured will exceed the capacity of multi-channel and switching equipment at higher headquarters.

PROGRAM STATUS: The Marine Corps is participating in this joint program with the Army and Air Force. The initial production contract was awarded in April 1982. Marine Corps IOC is scheduled for FY-93.

DEVELOPER/MANUFACTURER: Raytheon



## HAVE QUICK II ANTIJAM COMMUNICATIONS

DESCRIPTION: This program consists of UHF radios (airborne and ground) with a frequency hopping capability to provide a degree of antijam voice communications protection. Incorporation into Marine Corps aircraft and command and control facilities will enhance warfighting capabilities. HAVE QUICK II equipment includes the AN/PRC-113, AN/VRC-83, AN/GRC-171A(V)4, AN/ARC-182, and GPS timing equipment:

- AN/PRC-113 and AN/VRC-83: The standard ground-based portable and vehicular UHF radio which primarily supports close air support operations.
- AN/GRC-171A(V)4: The standard UHF radio supporting command and control agencies within the Marine Air Command and Control System.
- AN/ARC-182: The standard Navy airborne VHF/UHF radio which will incorporate both the HAVE QUICK II and SINCGARS frequency hopping algorithms.
- GPS TIMING EQUIPMENT: This equipment will provide frequency synchronization or time of day which is required for HAVE QUICK II operations. The timing source for HAVE QUICK II will be the GPS system.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

### Quantity

AN/PRC-113	1,550	-	-	-	-	-	-
AN/VRC-83	725	-	-	-	-	-	-
AN/GRC-171A(V)4	64	-	-	-	-	TBD	-
AN/ARC-182	-	-	-	-	-	TBD	-
TIMING EQUIPMENT	-	-	-	-	TBD	-	-

WHY IS IT IMPORTANT? HAVE QUICK II provides reliable antijam UHF communications which allows us to operate in a jamming environment.

PROGRAM STATUS: This is an Air Force development program. Individual equipment IOCs begin in FY-86. A system IOC will be attained in FY-91. These programs are on schedule.

MANUFACTURER/DEVELOPER: Magnavox and Rockwell International  
Collins Telecommunications

AN/TSC-96 PRODUCT IMPROVEMENT PROGRAM (PIP)

DESCRIPTION: The AN/TSC-96 is a UHF communications satellite terminal which provides a deployed MAGTF with access to the Naval Telecommunications System using fleet satellite (FltSat) and leased satellite (LeaSat). Currently 10 systems are in service, three each with the active communications battalions and one for training. These items have been used extensively since 1981 and consist of naval modular automated communications sub-system (NAVMACS) components which have been installed in two shelters. The AN/TSC-96 provides access to the Common User Digital Exchange (CUDIX) net for record traffic, secure voice net, fleet broadcast, and a low-speed teletype net. However, with the availability of satellite channels becoming a critical issue, the AN/TSC-96 must be modified to keep pace with improvements being made by the Navy to the CUDIX system so as not to loose interoperability. The PIP will consist of the following:

- Replace old teletype/printer equipment with new standard AN/UGC-74C USMC teletypewriters.
- Replace old ComSec devices with Navy standard ComSec equipment to retain interoperability.
- Add the TD-1271B Demand Assigned Multiple Access (DAMA) modem to retain interoperability with the Navy and make more efficient use of the limited UHF satellite communications capacity.
- Repackage components into one 10 foot ISO shelter to obtain a saving of cargo space during air/sea lift.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	10	-	-	-
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WHY IS IT IMPORTANT? The AN/TSC-96 provides the primary access to the NTS for record traffic to the deployed MAGTF. It is a high speed, dependable system which can be used from almost any location on earth. The secure voice telephone allows passage of critical information between command elements ashore and those afloat in real time. The fleet broadcast network provides a wide range of weather and other information of interest to the MAGTF.

PROGRAM STATUS: Naval Electronic Systems Engineering Center, Vallejo, California is currently developing a prototype. Testing will occur in 1988 and production will commence in 1989. All 10 systems will be modified by late 1990.

DEVELOPER/MANUFACTURER: Marine Corps Logistics Base, Barstow, California

## Part 2

### Intelligence

#### Introduction

This section contains summary papers on the major Marine Corps intelligence system programs under development. These programs and the intelligence systems already fielded comprise the MAGIS. As new intelligence systems come under development and old systems are retired, MAGIS will continue to evolve.

These summary papers describe systems which will support the MAGTF commander in the areas of imagery intelligence (IMINT); signals intelligence (SIGINT), to include communications intelligence (COMINT) and electronic intelligence (ELINT); counterintelligence (CI); intelligence management at the MAU and MAB levels; electronic warfare (EW); unattended ground sensor intelligence; and battlefield surveillance.

The new systems described herein emphasize the coming of age of Marine Corps intelligence. This modernization effort uses state of the art technology to provide near-real-time intelligence information in response to the MAGTF commander's urgent intelligence requirements.

## ALL SOURCE IMAGERY PROCESSOR (ASIP)

DESCRIPTION: The ASIP is a mobile ground processing facility designed to receive and exploit in near-real-time Side Looking Airborne Radar (SLAR), Infrared, and Electro-optical (EO) imagery from reconnaissance systems, carried on reconnaissance aircraft, as well as imagery received from national and theater sources.

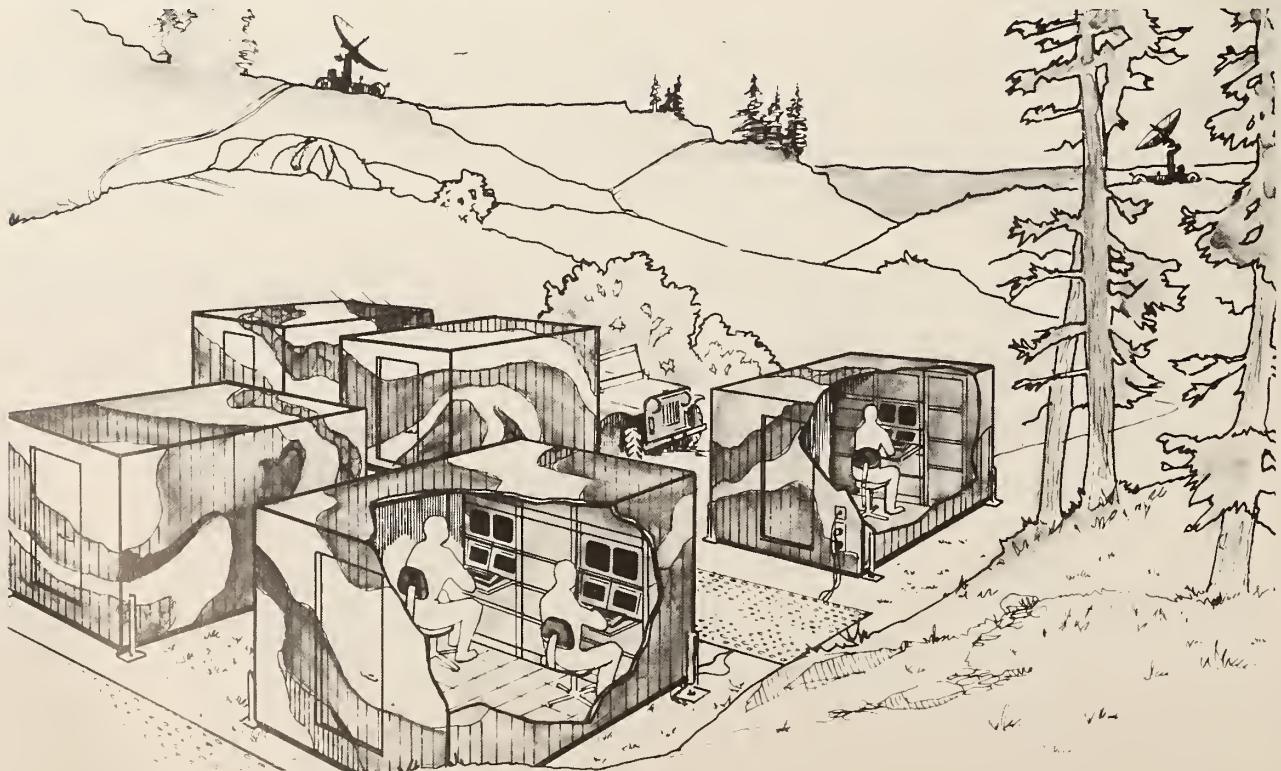
PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	-	2	4	2
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WHY IS IT IMPORTANT? The current Marine Corps capability for processing and exploiting imagery is dedicated to hard copy (film based) products. Now the thrust of technology is to near-real-time soft-copy, digital imagery, which is data linked from the sensor platform to the processing facility. Soft-copy imagery exploitation allows the photo interpreter to extract much more information than is normally attainable from film-based imagery. Data-linked digital imagery, soft-copy, computer-enhanced image exploitation and the increasing amount of digital imagery expected to be available in the future, requires that the Marine Corps move forward in the acquisition of a mobile ground processing facility able to be deployed with the MAGTF. The Marine Corps will purchase eight systems to replace the Imagery Interpretation Facilities at the three Force Imagery Interpretation Units and for training and software support.

PROGRAM STATUS: In March 1986 three corporations were selected to compete for FSD. Contract award for FSD is scheduled for July 1987. A production decision is expected in the 4th quarter FY-89. IOC is scheduled for 2d quarter FY-91.

DEVELOPER/MANUFACTURER: Air Force/TBD



## INTEGRATED SIGNALS INTELLIGENCE SYSTEM (ISIS)

DESCRIPTION: ISIS is a modular, transportable, semiautomated system that will give the Marine Corps a modernized and viable ground-based COMINT system which will be an integral part of combat intelligence operations. ISIS consists of two discrete functional capabilities--a front end collection and direction finding (DF) system (previously known as the Communications Collection Out-station) and a back-end analysis, processing, data base and reporting system (previously known as the Stand Alone Analysis System (SAAS)). The SAAS functions will be accomplished by procurement of the AN/TSQ-130V Technical Control and Analysis Center (TCAC). The ISIS collection and DF capability will be satisfied by an available off-the-shelf system, such as the AN/TRQ-32.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

### Quantity

CCO	-	TBD	-	-	-	-	-
TCAC	-	5	-	-	-	-	-

WHY IS IT IMPORTANT? With the advent of increased battlefield electronics usage and the increased tempo of combat, the Marine Corps considers computer assistance to tactical SIGINT, as incorporated in the ISIS, to be crucial for future Radio Battalion SIGINT support to MAGTF commanders. If the ISIS is not available in the field in the late 1980s time frame, the Marine Corps' SIGINT direct support capability will be severely degraded. The Marine Corps has a vital requirement for tactical SIGINT direct support at battalion level and above. This support must be tailored to the battlefield commander's intelligence needs during all phases of amphibious operations and subsequent operations ashore.

PROGRAM STATUS: TCAC acquisition is being supported by a Congressional reprogramming action. Procurement contract actions will be performed by the Army Joint Tactical Fusion Program Management office. IOC is planned for 2d quarter FY-88. CCO alternatives are being evaluated by CG, MCDEC and Director, NSA to support a 2d quarter FY-87 Milestone IIB decision regarding objective system selection.

DEVELOPER/MANUFACTURER: CCO - TBD  
TCAC - RCA Corporation, Burlington, Massachusetts

## ELECTRONIC INTELLIGENCE (ELINT) SUPPORT SYSTEM (ESS)

DESCRIPTION: The ESS is a modularized, semiautomated, transportable, tactical ELINT system capable of intercepting, locating, analyzing and identifying enemy ground-based, noncommunications emitters. The initial development system will consist of three ground-based, ELINT Collection Outstations (ECOs) mounted on an organic radio battalion tactical vehicle. Each ECO is a computer-controlled, monopulse, precision line-of-bearing (LOB) and signal identification system designed to operate as a stand-alone system. It can provide information on target emitters within its field of view directly to the TCAC segment of the ISIS. System capabilities include an airborne collection platform (ACP) to be digitally netted with the ground system. The ACP will collect, analyze, process, and distribute data to the ground-based ECOs for signal correlation, analysis and reporting.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

### Quantity

ECO	-	-	-	3	7	-
ACP	-	-	-	-	3	5

WHY IS IT IMPORTANT? The FMF radio battalion presently does not possess the capability to perform collection or exploitation of noncommunications threats. The ELINT system previously used in the FMF, the AN/TSQ-76, was issued on an interim basis pending development of an advanced system. It was obsolete in design, inadequate in frequency coverage, difficult to maintain, and lacked the mobility required to provide and maintain timely support to the MAGTF. It was deleted from the inventory in 1975. Employment of the ESS will fill a critical gap in the Marine Corps requirement to provide tactical SIGINT direct support at battalion level and above.

PROGRAM STATUS: UTL Corporation is presently completing the engineering design phase of ECO. Integration and testing will occur on the three prototypes 3d quarter FY-87. Preliminary design for the airborne aspect has been completed and contract proposals are scheduled for 2d quarter FY-87. Ground segment IOC is planned for 2d quarter FY-91, with airborne IOC in 1st quarter FY-92.

DEVELOPER/MANUFACTURER: UTL Corporation, Dallas, Texas

ADVANCED MARINE AIRBORNE SIGNALS INTELLIGENCE (SIGINT) SYSTEM (AMASS)

DESCRIPTION: AMASS is a mobile, tactical SIGINT system which will extend the range of Marine Corps passive SIGINT detection capability. The system will consist of an organic RPV-based airborne collection and direction finding package and a ground control and processing station. Data received by AMASS will be processed and disseminated to the MAGTF commander as well as to appropriate operations centers.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	-	-	2	2
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WHY IS IT IMPORTANT? Although the Marine Corps possesses a limited non-real-time ELINT/Electronic Warfare Support Measures (EWSM) capability in its fixed wing EW squadron, the bulk of cryptologic direct support to the MAGTF is provided by the ground-based radio battalion. AMASS will provide highly perishable information from organic airborne SIGINT systems reconnoitering in the area of operations. The Marine Corps has the requirement to provide SIGINT data to all elements of the MAGTF. AMASS will fill a critical gap in the Marine Corps to provide signals intelligence beyond the ranges now possible with ground-based SIGINT collectors.

PROGRAM STATUS: The Marine Corps, Army and NSA are executing a joint program to integrate non-developmental item technologies into an RPV platform to demonstrate SIGINT applications. Once design efforts are complete, each service will apply the technology to its unique programs. Initial demonstration of capability is scheduled for 4th quarter FY-87. IOC is planned for 1st quarter FY-94.

DEVELOPER/MANUFACTURER: TBD

TEAM PORTABLE COMMUNICATIONS INTELLIGENCE (COMINT) SYSTEM (TPCS)

DESCRIPTION: TPCS is a highly mobile man- or team-pack system capable of performing automated collection, direction-finding, processing, analysis, reporting, disseminating and collection management functions.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	-	-	1	1
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WHY IS IT IMPORTANT? TPCS will be a logical continuation of current manpack receiver and DF system acquisition efforts and will fill a void in current SIGINT direct support efforts, especially in the initial phase of the amphibious landing.

The radio battalions are to provide timely and accurate tactical SIGINT to the MAGTF commander. This support is currently performed by independent systems that are tied together via secure communications. TPCS will provide flexible intra/intersystem communication and a microprocessor terminal that will enable the radio battalions to provide support to smaller MAGTFs; e.g., MAU, when larger systems are not available or appropriate.

PROGRAM STATUS: A formal acquisition strategy was published 1st quarter FY-87. Eventual system integration will include non-developmental items to the maximum extent possible using technology developed by independent contractors as well as service/agency laboratories. Milestone I is scheduled for 2d quarter FY-87. IOC is planned for 1st quarter FY-91.

DEVELOPER/MANUFACTURER: TBD

MOBILE ELECTRONIC WARFARE SUPPORT SYSTEM (MEWSS)



DESCRIPTION: The MEWSS is an electronic warfare system capable of rapid mobility over all types of terrain, with an amphibious capability. The MEWSS' electronic suite consists of a direction finder set, a jammer, and intercept receivers installed in a LAV chassis. The system is designed to provide MAGTF commanders with the capability to detect, determine LOB, and degrade enemy tactical communications during the amphibious assault and subsequent operations ashore, to include mechanized operations. This multiple capability is enhanced by the LAV's light armor protection.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	12	-	-	-	-	-
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WHY IS IT IMPORTANT? The Marine Corps currently has no lightly armored or mobile electronic warfare capability. The MEWSS will provide the ability to support mobile operations, both in the AOA and during subsequent operations ashore.

PROGRAM STATUS: System integration and operational testing was successfully completed in the 4th quarter FY-86. Milestone IIIB was scheduled for 1st quarter FY-87. IOC is planned for 4th quarter FY-88.

DEVELOPER/MANUFACTURER: TACOM/General Motors Company, Ontario, Canada

## COUNTERINTELLIGENCE AND SECURITY EQUIPMENT (CI&SE)

DESCRIPTION: The CI&SE program consists of three subprojects: the technical surveillance countermeasures (TSCM) program, counterintelligence equipment program (CIEP), and the counterintelligence communications system (CSS) program. The CI&SE program is designed to provide specialized material to FMF counterintelligence teams (CITs) which will be used to improve the CITs' capability to collect, analyze and disseminate information, conduct counterintelligence operations, carry out the anti/counterterrorist mission and improve the quality of overall support to MAGTF organizations.

FUNDING PROFILE:      PRIOR    FY-87    FY-88    FY-89    FY-90    FY-91    FY-92

\$ Thousands

TSCM	-	133	591	-	-	-	-
CIEP	-	OT&E	OT&E	OT&E	OT&E	-	-
CCS	-	-	-	1,247	-	-	-

PROGRAM STATUS: The Marine Corps will procure the items of equipment requested in the current program. The CSS will undergo developmental test/operational test in FY-87. IOC is expected in FY-89.

DEVELOPER/MANUFACTURER: TSCM-TBD (various)  
CIEP-TBD (various)  
CSS-Marine Corps

## TACTICAL REMOTE SENSOR SYSTEM (TRSS)

DESCRIPTION: TRSS is an unattended ground sensor set of equipment that provides real-time information on enemy movement, force structure, and speed and direction of movement during amphibious operations and follow-on operations ashore. The set of equipment consists of hand- and air-emplaced sensors, monitors and radio relays. The USMC has a current set of equipment, referred to as Phase III, which satisfies current ground sensor requirements. TRSS is the follow-on sensor set that will replace the current sensor set in the 1990-92 time frame. The prime objective of this project is to decrease the bulk, weight, and unit cost of system components through the exploitation of microminiaturization. Components of the TRSS are listed below:

- Sensors. TRSS will be a complete suite of equipment which will incorporate hand- and air-emplaced sensors that use a variety of detection techniques. Currently, seismic, acoustic, magnetic and infrared techniques are employed. This project uses these techniques as a baseline, and will investigate other potential methods such as imagery sensors. Sensors for special purposes, to include NBC warning, will be evaluated.
- Monitors and Relays. Monitors provide readout and recording of sensor data, and relays extend the operational range of the system by extending radio frequency line-of-sight between the sensor field and the monitor site.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	-	-	-	-	4	-	-
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WHY IS IT IMPORTANT? TRSS replaces existing sensor equipment which is reaching the end of its service life.

PROGRAM STATUS: Fabrication of advanced development models was completed in FY-86. Developmental and operational testing will be completed in the 2d quarter FY-87; a decision to transition into FSD is expected by 30 April 1987. IOC is scheduled for FY-91.

DEVELOPER/MANUFACTURER: Sandia National Labs, Albuquerque, New Mexico  
Naval Avionics Center, Indianapolis, Indiana



magnetic intrusion device

encoder/transmitter unit

seismic intrusion device

## CHAPTER V

### THE MARINE CORPS RESERVE

#### Introduction

Active force capabilities in the Marine Corps are primarily determined by the responsiveness and deployability required of three active MAFs. In this context, requirements for regular manpower are driven by peacetime commitments, forward deployments, rapid deployment criteria and the need for a rotation base. In broad terms, the reserve complements this force with a capability to rapidly expand structure by one third and increase trained manpower by one half. Considered as a total force, 25 percent of the combat structure and 33 percent of the trained manpower are in the reserve. Pictured below are the Selected Marine Corps Reserve (SMCR) units in CONUS and Hawaii. Other units are located in Alaska and Puerto Rico.



#### Training, Readiness and Support of the Active Forces

Aggressive and extensive training programs are conducted within the Marine Corps Reserve for the purpose of enhancing its warfighting capability. Training is directed at both the SMCR and Individual Ready Reserve (IRR) to ensure trained units and individuals are available upon mobilization.

Perhaps the most important aspect of SMCR training is its exercise program. The effort devoted to MOS and other individual training, attendance at formal professional schools and unit training culminates in the conduct of exercises. Exercise participation affords reservists the same opportunities as their regular counterparts to develop and maintain skills in command and control, fire support coordination, amphibious planning/execution, and fire and maneuver.

The 4th MarDiv, 4th MAW, and 4th FSSG maintain an active exercise cycle which each year includes two combined arms exercises (CAXs) and battalion or larger size cold weather, mechanized, amphibious landing, mountain and artillery fire exercises. Emphasis is placed on maximum participation in integrated exercises; i.e., those which involve both active and reserve component units, in order to increase the integration and interoperability of both components. A 5 year plan has been developed by the SMCR in conjunction with the force commanders to increase SMCR unit participation in active component exercises.



During 1986 approximately 20,000 selected reservists participated in major exercises within CONUS and abroad. Many of these were integrated with the active component; e.g., Alpine Warrior (Wisconsin), Red Flag (Nevada), Bold Eagle (Florida), Blazing Skies (New Mexico), Northern Wedding/Bold Guard (Denmark/West Germany), Anchor Express (Norway), Display Determination (Mediterranean), and Team Spirit (Korea). An ambitious exercise schedule will be conducted in FY-87 and will include two CAXs as well as these other exercises: Kernal Blitz (California), Solid Shield (North Carolina), Distant Hammer (Mediterranean), Display Determination (Mediterranean) and Cold Winter (Norway).

Exercise Solar Flare is a particularly significant 1987 exercise for the reserve component; for the first time, an SMCR MAB-sized MAGTF will be placed under the operational control of a force commander. The reserve 2d MAB reported to FMFLant in August 1986 for exercise planning and will be chopped to CG FMFLant for operations at an appropriate time during 1987. The exercise will include two MABs, one from each component, and will allow the two MABs to oppose each other in a force-on-force exercise scenario. Both MABs will be integrated; i.e., their subordinate elements will consist of both active and reserve component units. Exercise Solar Flare is a classic application of Total Force policy and will make a significant contribution to the interoperability of our active and reserve components.

Participation in the Marine Corps Combat Readiness Evaluation System (MCCRES) is an important feature of the SMCR training program and is one method used to evaluate combat readiness. Reserve units are routinely assessed with the same criteria used to evaluate their active component counterparts. During FY-86, 14 battalion/squadron size SMCR units were administered the MCCRES

test, and each was evaluated as combat ready. The FY-86 test results are especially significant when one considers the limited time available for reserve unit training.

Mobilization Operational Readiness Deployment Tests (MORDT) are administered to SMCR units to assess their capability and readiness to mobilize. The tests are administered by teams from the 4th MarDiv and 4th MAW Headquarters to their subordinate units over a 3 day period (Friday-Sunday) with 3 day notification (Tuesday). Each test includes recall of the entire unit and packing and staging all equipment and supplies for shipment. Some tests involve loading all staged equipment and supplies aboard local commercial transportation (MORDT/Load Out). Other tests involve an actual deployment of the entire unit to a military installation which is frequently several hundred miles from the unit's home training center. During FY-86, 111 SMCR units underwent a MORDT; 91% were evaluated as ready.

Support for the active component is an important facet of the reserve program. The Selected Augmentation Unit (SAU) program is a recent initiative designed to support the active component by providing selected reservists to man regular FMF structure which cannot otherwise be staffed because of active component end strength restrictions. The SAU program entails the use of SMCR units, or portions thereof, which have no requirement to augment or reinforce I, II, and III MAF, to occupy unmanned structure in like type active FMF units with significant personnel deficiencies. The SMCR units will conduct additional temporary duty (ATD) each year with the same regular FMF unit. Upon mobilization, the reserve unit reports to, joins, and deploys with "its" active component unit. The program is intended to be conducted on the unit level and develop a strong, long-term relationship between supporting SMCR units and supported regular units. The SAU program will be implemented in FY-87 with units from 1st, 2d, 3d and 4th FSSGs. Approximately 2,000 reservists from 4th FSSG will participate. It is anticipated that the program will be expanded to include combat and combat support units within the next year and ultimately will include about 8,000 reserve participants.

In addition to the SAU program, a substantial portion of the reserve training programs are designed to accomplish two objectives: provide training for reservists while simultaneously supporting active component FMF units. The exercise support and reserve counterpart training (RCT) programs are used as much to assist active component units as to provide training to individual reservists and reserve units. Several examples illustrate this relationship. Most participation in the RCT program is generated by requests from regular units for support during periods when unusually heavy workloads or personnel shortages are anticipated. During FY-86, 3d and 4th Air/Naval Gunfire Liaison Companies (ANGLICOs) in the reserve component participated in several joint/combined active component exercises in and out of CONUS to assist the heavily committed active ANGLICOs to meet requirements. The 4th MAW supported MCASs Futenma and Iwakuni, Japan during the last two Team Spirit exercises by providing detachments over a 3 month period to help operate station airfields and dining facilities. Annual training duty is also used to support the active component when a need can be matched with a training opportunity; e.g., 4th FSSG provided reservists to help operate the III MAF post office during a period of personnel shortages. The 4th MAW used a combination of ATD and drill periods during FY-86 to provide approximately 700 hours of aerial refueling support for our active component wings and support for 2d Fleet exercises in the Caribbean.

As a further example of support, two squadrons from 4th MAW assumed contingency missions for two active component counterparts during FY-86 while they transitioned from one aircraft to another.

The activation during FY-86 of VMFT-401 at MCAS Yuma, Arizona is an especially significant example of reserve support for the active component. This 4th MAW squadron will be equipped with F-21A Israeli KFIR fighter aircraft and manned by reserve Marines. The squadron will provide training for squadrons in both components in adversary fight tactics. Initial delivery of aircraft will occur in April 1987, and it is anticipated the squadron will be fully operational by late FY-87/early FY-88.

Training for members of the IRR is accomplished through three programs. One of these is the exercise support program, which is designed to provide individuals the opportunity to participate in major exercises conducted under the cognizance of FMFLant and FMFPac. The individual reservist is assigned to an active component FMF unit and performs duties appropriate to his/her MOS as a member of the unit for the duration of the exercise. For example, during 1986 15 reservists joined the 9th MAB staff and participated in exercise Yama Sakura in Hokkaido, Japan, and 120 members of the IRR joined various commands in III MAF to participate in Exercise Team Spirit in Korea.

Another means for IRR training is through the RCT program, which is designed for the IRR to provide its members the opportunity to train in their MOSs with their active component counterparts. It is similar to the exercise support program in that members of the IRR join an active component unit to work in their MOSs alongside their regular Marine counterparts. The reservists receive their training by assisting their counterparts in accomplishing the typical daily work assigned an FMF unit.

Attendance at professional schools is the third method of training the IRR. These opportunities provide formal professional development training similar to that offered to regular Marines. The courses are designed to accommodate the standard 2 week period of annual training duty. Reserve courses are conducted by the Landing Force Training Commands on each coast, Amphibious Warfare School and Command and Staff College at MCDEC and several schools of the other military services.

The IRR population is anticipated to increase to 75,000 by FY-91. The increases result from the recently instituted 8 year military service obligation and presents a significant challenge to insure MOS proficiency through the conduct of refresher training. The RCT program will become the primary vehicle for accomplishing this training. A refresher training pilot program will be conducted in FY-87. A significant expansion of the RCT program is anticipated in FY-88 to satisfy the requirement for IRR MOS refresher training.

#### Budget

The Reserve PresBud 88/89 request for \$366.1 and \$387.8 million respectively will support both enhancement initiatives and an SMCR end strength of 43,700 in FY-88 and 44,500 in FY-89. This funding represents about 3.8 percent of the total Marine Corps budget in both years and a real growth of approximately 12 percent. The total real growth is in the O&MMCR appropriation.

Significant programs included in the FY 88/89 Reserve budget are initial issue of improved NBC and cold weather clothing; funding to support activation of the 4th LAV Battalion, Target Acquisition Battery and TOW platoons; Full-Time Support (FTS) strength increases of 351/292; and instructors to support training of Marine reservists at formal schools.

### Conclusion

The Marine Corps Reserve is a vital dimension of the Corps' Total Force. High morale and the dedication of its Marines are major strengths. Requirements to improve present and future capabilities have produced some crucial objectives, primarily in manpower and equipment. The approach towards achieving these objectives can be summarized in a three-pronged strategy.

- First, to continue with substantial efforts in recruiting, training, and retaining quality Marines.
- Second, the momentum of force modernization must continue. State of the art equipment and modern training facilities are extremely important.
- A final key to enhancing reserve capabilities is continued emphasis on active/reserve integration.

Total Force, with separate but complementary active and reserve contributions, is a vital, established reality in the Marine Corps.

## CHAPTER VI

### MANPOWER AND QUALITY OF LIFE

#### Introduction

Despite the allocation of significant resources to modernization programs, the Marine Corps has not neglected its most important asset--the individual Marine and the Marine's family.

Our first priority continues to be the accession and retention of high quality individuals. Recruiting and retention statistics for FY-85 and FY-86 bode well for the future and should ensure that the individual, combat-trained Marine remains our most valuable asset.

Quality of life (QOL) is the total of those factors which contribute to the standard of living for service members and their families. It includes:

- Pay, allowances and military pay tax advantages.
- Medical and dental benefits.
- Family housing investment, operations and furnishings.
- Commissary and exchange support.
- Leave and retired pay accrual.
- Morale, welfare and recreation funds.
- Bachelor housing construction, operations and furnishings.
- G.I. Bill and VEAP benefits.
- Off-duty education assistance.
- Legal assistance.
- Space available transportation.
- Other personnel support programs, including family service centers, employment resource centers, child care programs, dependent schools, drug and alcohol abuse prevention, family advocacy, casualty assistance, community services, chaplain support, base libraries, base newspapers, etc.
- Non appropriated funds.

This chapter will discuss our manpower program and three key elements of QOL in more detail: military construction, bachelor enlisted quarters (BEQs), and family housing.

## Part 1

### Manpower

#### End Strength

The determination of military manpower requirements is a part of the continuous comprehensive requirements determination process based on the approved national strategy and DG. The analysis considers traditional functions and missions to determine a requirement for manpower first of all using a structure designed for minimum risk. This minimum risk force is unconstrained by fiscal and manpower limitations. The minimum risk force is then refined to a planning force consistent with a reasonable level of risk. This planning force is judged capable of executing the Marine Corps mission for the national military strategy, and represents the mid-range objective described in the current MMROP. This plan presumes a peacetime draft and 180 days of mobilization.

In recognition of existing fiscal constraints, the planning force, as a mid-range objective, is further pared down to the force levels required immediately for war. Such force levels comprise the programmed structure and provide the specific requirements for program development, as well as for measuring immediate readiness for war. The FY-89 defense authorization includes the resources for a Marine Corps end strength of 200,100.

The program to support new requirements attempts first to correct existing skill deficiencies and then to achieve the new manning levels by sustaining an aggressive recruiting and retention program and a relatively level non-prior service accession demand.

The end strength profiles are displayed in thousands below:

	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Officer	20.3	20.3	20.3	20.3	20.3	20.3
Enlisted	<u>179.3</u>	<u>179.3</u>	<u>179.8</u>	<u>180.3</u>	<u>181.3</u>	<u>182.6</u>
	199.6	199.6	200.1	200.6	201.6	202.9



### Recruiting and Retention

The Marine Corps is presently enjoying a period of unprecedented success in the areas of retention and recruiting. This level of success, in large measure, determines readiness of the Corps both today and for the future. The Marine Corps continues to pride itself on planning for and providing the right force, both in quality and quantity, to meet our unique missions and responsibilities. Our plans for FY-87 primarily built on the success achieved the previous year, attempting to refine programs and procedures to maintain a high level of readiness.

We continue to experience high retention in our officer corps. Additionally, during FY-86, 1,767 high-quality lieutenants and warrant officers were accessioned. These trends in officer retention and accessions are expected to continue through FY-87.

In FY-86, over 99 percent of the regular male non-prior service recruit accessions scored in the upper three categories of the Armed Forces Qualification Test (AFQT), and over 97 percent of the accessions were high school graduates.

Total reenlistments remain strong in both number and quality. Retraining well-qualified and proven Marines raises the leadership and experience levels of the force. This, combined with controlled use of the Selective Reenlistment Bonus (SRB) program and a lateral movement program, contributes significantly to lowering skill imbalances throughout the Corps.

Field commanders also benefit from the force "aging" process enjoyed today, which builds on better retention, providing more experienced and qualified Marines at every level of responsibility. A consequence of "aging" is growth in the married population. In FY-86 44% of our active duty Marines were married. This higher incidence of marriage and improved retention provides a stabilizing influence on the force as a whole. One reason for the aging is an increased emphasis on longer enlistment and reenlistment contracts. Only 70 percent of our recruits in FY-81 entered under four to six year contracts; over 99 percent

were recruited for these longer periods in FY-86. This same emphasis is being placed on reenlistments.

The Marine Corps continues on a steady and successful course of commissioning and enlisting quality young Americans. As mentioned, we enjoyed unqualified success in FY-86 recruiting. As officer strengths remain relatively stable, only 1,710 new officers will be required in FY-87, 1,819 in FY-88 and 1,831 in FY-89. Similarly, despite planned growth in enlisted strength, only about 35,100 new Marines will need to be enlisted in FY-87, 35,551 in FY-88 and 30,560 in FY-89.

With respect to accessions in FY-87, we will enter the year well poised to maintain the momentum, starting with 58 percent of the total enlisted force requirements in the Delayed Entry Program (DEP) pool. Additionally, over 99 percent of those in the DEP are high school graduates and seniors.

We have never been more ready to fulfill our role as the nation's force-in-readiness. We have attained unprecedented heights of quality while surpassing every retention and accession goal. Our Corps today is not an accident, but a product of long-term planning, support and leadership of which we can be proud.

As we look to the future, the continuing decline in the youth population of military age, the expanding gap between military and private sector pay, and a declining trend in enlistment propensity pose difficult recruiting challenges for the future. To respond to increasingly difficult conditions, we must provide adequate recruiting resources and enlistment incentives for the Marine Corps. We are confident that, with these actions, we can continue to meet our manpower needs with volunteers.

Part 2

Quality of Life

Military Construction (MCON)

In FY 88/89, the Marine Corps Military Construction fund request is \$313.2 and \$322.2 million respectively. The funding reflects a balanced program with projects distributed as follows:

	<u>FY-88</u>	<u>FY-89</u>
Operations and Training	18%	22%
Maintenance	26%	29%
Quality of Life		
[BEQs, community facilities]	38%	41%
Other (Supply and storage, utilities)	18%	8%

Once again this year, QOL projects continue to represent the largest single category in the MCON program. The lion's share of these projects were BEQs which provide 4,030 spaces in FY-88 for Marines at six different activities and 4,668 spaces for Marines at seven different activities in FY-89. These new BEQ spaces all conform to the current DOD guidelines of two-room modules with an adjoining bath. The remaining projects in this category in FY-88 includes one mess hall rehabilitation and in FY-89 includes eight child care centers, two physical fitness center additions, one mess hall and a multi-purpose facility.

Emphasis on maintenance facilities remains high. Corps-wide, 12 maintenance projects are being requested in FY-88 and 26 projects in FY-89. These will enhance the ability to maintain our existing equipment plus provide additional spaces to support new equipment coming on-line. Almost every tactical Marine activity will be getting at least one new maintenance facility to support new equipment such as the F/A-18, AV-8B, LAV, or M-198.

Facilities to house Combined Arms Staff Trainers (CAST) for Marine Corps Base Camp Lejeune and Marine Corps Air Station (MCAS) Kaneohe Bay are being requested in FY-89. Additionally, MCAS New River and MCAS Cherry Point have projects that will house state of the art flight simulators and weapons trainers which will enhance all phases of training for pilots.

Security consciousness in the Marine Corps is a key factor in protecting both Marines and our limited physical assets. As such, flight line security projects at MCAS El Toro, MCAS Iwakuni, MCAS Yuma and MCAS Futenma will improve security for aircraft assigned to these activities.

<u>Funding</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
(\$ Millions)	262.8	313.2	322.2	378.1	378.0	400.2

### Bachelor Enlisted Quarters (BEQs)

The Marine Corps follows the DOD policy of providing suitable accommodations for all bachelor military personnel required to reside aboard the activity for military necessity, and for those personnel who reside aboard the activity when suitable accommodations are not available in the local community. Government quarters will not be built for officers and staff noncommissioned officers who are not required to live aboard for military necessity or for whom suitable private accommodations are available.

To implement this policy, we have programmed approximately 36 percent of our annual MCON budget for BEQs. With the completion of the FY-86 program, our inventory of adequate enlisted billeting spaces will be approximately 80,882 through new construction and modernization of existing quarters. Displayed below is the planned profile for this program:

	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Number of Adequate Spaces Planned to be Added During Year	3,982	4,030	4,668	3,090	4,195	2,576
Cost of New Construction/Modernization (\$ Millions)	69.1	107.8	100.5	30.6	89.3	71.9

### Family Housing

CMC has the management responsibility for approximately 20,000 family housing units and 625 mobile home spaces throughout the United States and Japan. We are continually building new units where deficits exist, particularly in southern California. During the period 1981-1986, 1,979 new family housing units were constructed, are currently under construction or have been approved. Additionally, 632 new units will replace the aged inventory of Sterling Homes located near Camp Pendleton. This is a very special project in that we are building strictly for privates through lance corporals. The construction program proposed for FY-87 includes building 300 mobile home sites at four locations. Additionally, 80 more mobile home sites are programmed for the FY-88 construction program. Marines often buy a mobile home and are transferred to an area such as southern California where only limited off-base sites exist. Construction of more mobile home spaces will offer a Marine both that "chance" to buy if he so wishes and also a place to move this home when transferred.

The major repair program has tremendously affected our homes by renovating our existing inventory. Whole house rehabilitation for over 8,000 homes has been conducted since FY-81. Plans exist for an additional 5,000 whole house rehabilitations in the next 5 years. Places such as Midway Park at Camp Lejeune, Ribout Village at Parris Island, Namar Housing at El Toro and housing at Cherry Point have been or are undergoing whole house repairs. These homes are exclusively used by privates through lance corporals.

The family housing improvement program also improves QOL. Through this program, patios and dishwashers are being added to homes and athletic facilities are programmed.

Based on current known deficits, the Marine Corps construction program in numbers of units is identified below:

<u>Activity</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
MCAS El Toro		100	100	-	-	-
MCAGCC 29 Palms	392	100	100	-	-	-
MCB Camp Pendleton		268	332	550	550	550
<b>TOTAL</b>	<b>392</b>	<b>468</b>	<b>532</b>	<b>550</b>	<b>550</b>	<b>550</b>

The major repair program which is accomplished within the maintenance program will provide the needed renovations. Funds programmed for major repair projects are indicated below:

<u>Funding</u> (\$ Millions)	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
	23.9	28.5	24.5	27.5	27.5	26.5

Improvement programming is as follows:

<u>Funding</u> (\$ Millions)	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
	7.5	6.8	3.0	10.0	12.8	16.5

## CHAPTER VII

### TRAINING

#### Introduction

The Commandant established a separate Training Department on the Headquarters staff to provide more effective management of Marine Corps training as a total system. The Training Department is chartered to develop policies and programs for the training and education of regular and reserve Marines. This responsibility includes:

- Management and direction of training programs and initiatives.
- Analysis of training and publication/evaluation of collective and individual training standards for all categories of training conducted in Marine Corps units and institutions.
- Allocation and management of training resources to achieve maximum effectiveness and efficiency of training in the context of missions and standards.

The Marine Corps has adopted a training system based on the successful completion of established training standards, both collective and individual. The training standards are listed below:

- Individual training standards have been published for the infantry, tactical helicopter, observation fixed-wing, tactical fixed-wing, support crews, data systems, and transportation occupational fields and essential subject training.
- Collective training standards have been published for air command and control, ground combat, combat support, combat service support and special operations.

We require that our training programs continue to be performance and mission oriented, realistic and innovative. To accomplish this goal, the Marine Corps will participate in 195 joint, active and reserve exercises in FY-88 and 190 such exercises in FY-89. This is an increase over the 172 exercises anticipated in FY-87.

The Marine Corps has increased the number of units participating in training exercises and made the scenarios more realistic. The commanders are able to evaluate their unit's performance and the effectiveness of their contingency plans under realistic weather and terrain conditions, and threat scenarios.

MCAGCC, Twentynine Palms, California has the mission to conduct realistic training in the integration of all supporting arms and to evaluate the combined arms capabilities and readiness of all elements of Marine Air-Ground Task Forces (MAGTFs).

An exercise designated "Combined Arms Exercise" (CAX) has been developed to specifically support the accomplishment of MCAGCC's mission. The standard scenario presupposes an enemy equipped with current Soviet weapons and employing Soviet doctrine. Although the sequence and circumstances vary, standard events for a CAX are: (1) at least two command post displacements; (2) at least three attacks on objectives requiring complete combined arms fire support; (3) a night helicopterborne assault of company size; (4) development of barrier and defensive fire plans.

Ten CAXs are conducted at MCAGCC each year. The Mojave Desert training site is a realistic maneuver area that permits the use of live ordnance of all combined arms during the exercise. Lessons learned from CAXs are regularly incorporated into doctrine, tactics and equipment development.

The Marine Corps Mountain Warfare Training Center (MCMWTC) in Bridgeport, California provides an ideal location to train for our strategic roles in northern Europe and the western Pacific. We train approximately 12,000 Marines each year in mountain warfare and cold weather operations. Nine regular battalions and one reserve battalion train at MCMWTC each year.

We also train with our Allied counterparts around the world. Each year, Marines participate in joint or combined training exercises such as Teamwork, Northern Wedding/Bold Guard, Bright Star, Big Pine, Team Spirit and Display Determination. These training exercises have been unqualified successes and strengthen the Marine Corps' combined operations capability.

The Marine Aviation Weapons and Tactics Squadron-One (MAWTS-1) at Yuma, Arizona provides standardized advanced training in all aspects of the employment of Marine aviation. MAWTS-1 conducts the semiannual Weapons and Tactics Instructor (WTI) courses which provide extensive training for 140 aircrews and aviation command and control officers. These officers return to their units and establish a cadre for unit training programs. In addition, MAWTS-1 provides training for over 3,000 wing personnel in supplemental courses each year.

Recruit training remains the fundamental element of our success and is the first step in a program designed to develop the individual Marine. Recruit training provides a series of demanding but attainable performance requirements which each recruit can identify and master. We require the highest standards of performance and conduct from our drill instructors.

These are but a few of the items and support elements which make up our training system. This chapter presents several issues of importance to the development of the Marine Corps training program.

COMPUTER-ASSISTED SYSTEMS APPROACH TO TRAINING (CASAT)  
(Formerly Computer Assisted Instructional Systems Development)

DESCRIPTION: The Systems Approach to Training (SAT) process provides the framework within which Marine Corps training is analyzed, designed, developed, implemented and evaluated. The Marine Corps SAT process is based upon instructional systems development (ISD). The SAT process translates training requirements into training objectives, selects the proper training strategy, develops effective training systems and provides quality control. It is a flexible tool that ensures Marines acquire the knowledge and skills needed to accomplish the mission. The goal is to achieve the maximum return on training resource investments by improving on-the-job performance. CASAT is being developed so that Headquarters, Marine Corps can carry out its portion of the SAT process in a timely and cost-effective manner.

<u>FUNDING PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
\$ Thousands	700	280	150	150	150	150	150

WHY IS IT IMPORTANT? CASAT will facilitate the collection and processing of data from Marines in the field. It will:

- Assist in the analysis of this data by identifying which tasks are performed, by whom, where, the relative time spent in task performance, the task difficulty, the training emphasis and the commonality of tasks among military occupational specialties (MOSS) and similar units.
- Prioritize the tasks based on specified criteria.
- Facilitate the drafting and publishing of training standards by providing multiple formats and ease of update.
- Facilitate the revision and maintenance of published training standards.
- Evaluate student effectiveness in the field.
- Identify and track trends through automation, find optimal solutions and provide feedback to units and schools.

PROGRAM STATUS: CASAT will be developed for implementation at Headquarters, Marine Corps. A prototype system is currently being evaluated. The project is within budget and is scheduled for implementation in early FY-88.

DEVELOPER/MANUFACTURER: Contract for design and development has been awarded to Computer Sciences Corporation through the General Services Administration-Interagency Data Systems Facility (GSA-IDSF) located in Huntsville, Alabama.

## TRAINING REQUIREMENTS AND RESOURCE MANAGEMENT SYSTEM (TRRMS)

DESCRIPTION: TRRMS will be the primary training information management system in the Marine Corps. TRRMS will consist of a centralized training information data base that will provide critical data analysis to match training requirements with training resources. TRRMS will provide better projections of training requirements and improve reporting capabilities to DOD and Congress. TRRMS is designed for use at HQMC.

<u>FUNDING PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
\$ Thousands	880	1,600	830	830	750	770	770

WHY IS IT IMPORTANT? TRRMS will provide ready access to accurate and timely data to improve manning of operational forces and improve retention in the career force. TRRMS will reduce the shortfalls in trained personnel due to inefficient use of available training resources. The reduction of unfilled school seats will result in a more balanced MOS structure. The decision-making process will improve as this detailed information is made available.

PROGRAM STATUS: Portions of TRRMS are currently operational. All major milestones are met. Full operational capability is anticipated by the end of FY-88.

DEVELOPER/MANUFACTURER: The Naval Education and Training Program Management Systems Activity (NETPMSA), under the control of the Chief of Naval Education and Training (CNET), is conducting the development, design and implementation of TRRMS.

## TACTICAL DECISION MAKING AIDS

DESCRIPTION: The Marine Corps has fielded and is continuing to develop a variety of tactical decision making (TACDM) training materials and simulators to complement traditional training in the FMF and formal schools.

The Tactical Warfare Simulation, Evaluation and Analysis System-Integrated Maneuver Controller (TWSEAS-IMC) project will provide a fourth suite of equipment, currently planned for III MAF. The new software will closely simulate ground combat operations, air combat operations, combat support and combat service support operations. The TWSEAS-IMC will be capable of controlling integrated field and map exercises for FMF units or executing four simultaneous command post exercises for formal schools. A major hardware upgrade in conjunction with IMC will provide remote terminals for reserve and active units not equipped with full TWSEAS suites.

The manual war game effort has produced and fielded TACWAR, the company level system and the prototype of STEELTHRUST, the battalion level war game. The basic version of STEELTHRUST will be fielded in FY-87. Follow-on development will include amphibious variants of TACWAR and STEELTHRUST, TACWAR DESERT and occupational specialty systems for infantrymen and combat engineers.

An initial CAST is being developed to support fire support planning and coordination training in conjunction with the CAX program. The CAST will consist of a terrain model, a target designation system, and a communications system which replicates MAB tactical communication nets. Four additional CASTs will be procured for FMF locations.

<u>FUNDING PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
<u>\$ Thousands</u>							
TWSEAS-IMC	-	-	6,932	-	-	-	-
MANUAL WAR GAMES	820	200	300	200	-	-	-
CAST	-	1,600	-	3,102	3,186	-	-

WHY IS IT IMPORTANT? Each simulator or training package provides the commander with an alternative method of training and exercising his subordinate commanders and staff in planning, controlling and executing critical combat functions.

PROGRAM STATUS: Each of the TACDM acquisitions has an IOC between FY-87 and FY-89. The CAST delivery schedule extends to FY-92 for the various FMF sites.

## TRAINING RANGE DEVELOPMENT

**DESCRIPTION:** The Marine Corps is continually reviewing training ranges with the goal of providing the best training possible for our Marines. We are now developing two multipurpose range complexes, one at Camp Pendleton, California and another at MCAGCC, Twentynine Palms, California. These ranges will incorporate a vast array of computer-controlled targets for infantry, armor, anti-armor and aviation units. The targets will be both stationary and moving, fully automated, self-scoring and programmable for any number of different scenarios. When completed, these ranges will provide the Marine Corps with state of the art training facilities in support of precision gunnery training for direct fire weapons. Ranges of similar function, but limited scope, are planned for Camp Lejeune, Camp Butler and Kaneohe Bay. POM initiatives for facilities to train for military operations in urban terrain (MOUT) have been submitted for Camp Lejeune. Additionally, targets, hostile fire devices and control mechanisms are being procured to support the CAXs at Twentynine Palms.

<u>FUNDING PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
\$ Thousands	7,984	1,100	15,745	3,000	-	12,500	-

**WHY IS IT IMPORTANT?** Force modernization has highlighted the need to incorporate modern training range development with the fielding of powerful new weapon systems. The development of ranges that maximize the training value received from the ammunition expended are of significant interest to Congress. The MOUT facility provides a unique environment for training in urban warfare.

**PROGRAM STATUS:** The Marine Corps' range development effort parallels a similar Army effort which is in excess of 100 million dollars. Additionally, training ranges and facilities must receive sufficient funds to meet individual and collective training standards for each weapon system. IOCs for all initiatives are reached in FY-89 and FY-90.

**DEVELOPER/MANUFACTURER:** The Marine Corps, in conjunction with the Army Corps of Engineers and Naval Facilities Engineering Command, San Bruno, California is developing the multipurpose range complexes.

## WEAPON/EQUIPMENT SIMULATION DEVICES

DESCRIPTION: These devices provide realistic substitutes for operating actual equipment, weapons and ammunition:

- Precision Gunnery Training System (PGTS). PGTS is a device which will simulate firing and tracking DRAGON and TOW missiles. It will provide immediate feedback to the gunner and instructor on the gunner's performance and will enhance proficiency when firing live missiles.
- Small Arms Remote Targets (SARTs). SARTs are electronic remote-controlled targets for small arms.
- Remoted Engagement Target System (RETS). RETS is a controlled system of moving and stationary personnel and antiarmor targets which provides target array and gunnery effect.
- Simulated Laser Targets (SLT). SLT simulates laser-designation of a tactical target, allowing pilots using aircraft equipped with Laser Search/Track sets to realistically perform operational training.
- Moving Target Simulator (MTS). MTS will provide precision gunnery training for as many as three Stinger gunners while simulating the tactical environment of close-in air defense.
- Maintenance Trainers. These computer-based simulators provide scenarios for maintenance, problem diagnosis and emergency action procedures for motor transport, engineering and radar equipment.

FUNDING PROFILE:      PRIOR    FY-87    FY-88    FY-89    FY-90    FY-91    FY-92

\$ Thousands

PGTS	-	-	2,836	4,580	-	-	-
SARTS	5,259	-	-	-	-	-	-
RETS	-	-	1,245	-	-	-	-
SLT	3,300	-	-	-	-	-	-
MTS	1,500	-	-	-	-	-	-
Maintenance Trainers	2,522	2,600	2,015	-	-	-	-

WHY ARE THEY IMPORTANT? Weapon and equipment simulation devices allow Marines to develop speciality skills before transitioning to full task training with real equipment and live ordnance. This approach not only saves on equipment wear and ammunition, but also reduces pressure on ranges, and allows Marines to repetitively practice critical tasks quickly and safely.

PROGRAM STATUS: IOCs for each of these programs fall between FY-87 and FY-89.

## INDIVIDUAL TRAINING STANDARDS (ITSS)



DESCRIPTION: ITSSs are measures of job performance used to describe what an individual is supposed to do in order to perform a job successfully. Individual training standards constitute the basis for design, development, implementation and evaluation of all individual training conducted in units and institutions. In addition, training standards can be used by the commander to determine proficiency, evaluate individual training, allocate training resources and maintain quality control.

FUNDING PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

\$ Thousands	5,580	3,747	3,232	3,220	1,075	1,094	1,114
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### WHY IS IT IMPORTANT?

- Ensures all Marines with the same MOS are taught the same skills.
- Provides means to evaluate training.
- Standardizes acceptable level of performance.
- Eliminates unnecessary training.
- Enables efficient allocation of training resources.
- Ensures that all tasks needed for satisfactory performance are identified.
- Saves time of unit and school commanders.
- Enables assignment of responsibility for training to units or institutions.
- Avoids duplication of effort by units and institutions.
- Enables validation of occupational field structure.
- Serves as a training guide/outline.

PROGRAM STATUS: Individual training standards are being developed by the Training Department. Standards are now complete or under development for 348 of the 742 MOSs. Standards for an additional 147 MOSs are expected to begin development in FY-87. The standards for the remaining MOSs will begin by FY-89.

DEVELOPER/MANUFACTURER: Eagle Technology and Allen Corporation provide contractor assistance for some occupational fields; others are done in-house.

## COMBAT ENVIRONMENT SIMULATION DEVICES

DESCRIPTION: Training devices which complement the effectiveness of training by simulating live fire engagement of opposing weapon systems:

- Multiple Integrated Laser Engagement System (MILES). MILES is an eye-safe, laser-transmitting system.
- Air-Ground Engagement System (AGES). AGES is a MILES adaptation for the Cobra and Huey helicopters.
- Ground Threat Radar Simulator (GTRS). GTRS simulates enemy communication jamming and other electromagnetic interference.

FUNDING PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

\$ Thousands

MILES	5,300	-	-	-	-	-	-
AGES	-	2,002	2,115	-	-	-	-
GTRS	760	-	-	-	-	-	-

WHY ARE THEY IMPORTANT? Combat environment simulation devices add realism to training exercises and allow Marines to experience those situations which closely resemble the conditions under which they will fight. Peacetime validation of doctrine, tactics and techniques is a natural consequence of using such devices.

PROGRAM STATUS: The IOC for MILES/AGES is expected for the 1st quarter FY-88.

## SCHOOL OF INFANTRY

**DESCRIPTION:** The objective of this initiative is to formalize the courses of instruction for infantry entry level and skill progression training by establishing a Marine Corps School of Infantry. Training will incorporate the current Infantry Training School courses and include a Squad Leader and Platoon Sergeant course. There will be two branches of the school, one at Camp Pendleton and one at Camp Lejeune. The total initiative involves the construction of an advanced infantry instructional facility and a student BEQ at each location, and the procurement of the weapons and equipment to support the instruction.

<u>FUNDING PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
\$ Thousands	-	-	2,813	19,302	3,805	4,378	4,461

**WHY IS IT IMPORTANT?** The infantry occupational field has no formal skill progression training. Presently, that training is provided by FMF commanders who must use their operational assets to accomplish it. A school for infantrymen will provide the Marine Corps with a method to accomplish future training requirements in the infantry community. With the increasing technological sophistication of infantry weapons, communication systems and combat support equipment, formal standardized skill progression training for infantrymen is a necessity.

**PROGRAM STATUS:** The Platoon Sergeant course is now a reality at Camp Pendleton using interim facilities. The first Squad Leader class is anticipated to begin in those facilities in April 1987. Interim facilities to allow similar instruction to begin at Camp Lejeune are expected by late FY-87. Permanent facilities should be complete in FY-90.



## CHAPTER VIII

### NAVY SUPPORT AND PROGRAMS

#### Introduction

This chapter contains a series of program summaries and point papers that focus on naval support requirements for amphibious power projection, an overview of the amphibious lift required to support this nation's Maritime Strategy and Marine Air-Ground Task Forces (MAGTFs) and medical support for amphibious operations.



## Amphibious Lift



Although the Marine Corps does not fund any portion of sealift assets, its role as an expeditionary force gives it a vested interest in the status of amphibious assault shipping. The FY 88/89-92 DG directed the DON to program the amphibious assault lift for the assault echelons (AEs) of a MAF and MAB. This MTO will be realized by the late 1990s. The assault echelons comprise only a portion of the total MAF or MAB force structure. The remaining structure must be transported by air with the fly-in echelon (FIE) and by commercial-type shipping as part of the assault follow-on echelon (AFOE). The Navy and Marine Corps have stabilized the stated AE lift requirements specified for the MAF and MAB in order to provide a basis for the programming of a balanced amphibious ship force structure.

The current MAF(AE) lift capability is dependent upon the availability of all active and reserve amphibious ships. To attain and maintain a level of amphibious assault shipping sufficient to simultaneously lift a MAF(AE) and a MAB(AE) requires new construction as part of the 600 ship program. An outgrowth of this coordinated effort to revitalize the amphibious assault shipping force has been the development of a number of innovative proposals for improved ship-to-shore mobility that will support a wide range of operational concepts and ensure that a credible amphibious warfare capability exists through the end of this century and beyond.

"WASP" CLASS (LHD)

DESCRIPTION: The "Wasp" class (LHD) is a multi-purpose amphibious assault ship. It will provide the Navy/Marine Corps team with our most capable ever amphibious ship. The ship's primary mission is to embark, deploy, and land elements of a Marine landing force in an assault by helicopters, landing craft, amphibious vehicles, and by combinations of these methods. The LHD class has a secondary/convertible mission for sea control.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity	2	-	1	1	-	1	-
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WHY IS IT IMPORTANT? The swift, forcible projection of our afloat Marine forces in the seizure or defense of: 1) advance naval bases for further operations, 2) land areas dominating straits and narrow seas and 3) strategic islands/peninsulas, is of obvious importance to any naval campaign; hence, the requirement for amphibious forces. In order to be successful, however, our commanders must have not only the necessary amphibious lift but also the flexibility to land the landing force by air or surface means. The LHD class provides this flexibility first of all as an augmentation (in the short term) for the LPH class helicopter assault ships and later on as the replacement for the LPHs. The LHD will significantly increase the total lift capability by providing a flight deck for both helicopters and V/STOL aircraft and offering a well deck for both air-cushion and conventional landing craft. LHD is the linchpin to obtaining our mid-1990s lift objective.

PROGRAM STATUS: LHD 1 (USS "Wasp") is under construction. The contract for LHD 2 was awarded in October 1986. It includes options for LHD 3 and LHD 4.

DEVELOPER/MANUFACTURER: Ingalls Shipbuilding, Pascagoula, Mississippi

"WHIDBEY ISLAND" CLASS (LSD 41)



DESCRIPTION: LSD 41 will provide well deck space and have a maintenance capability for both conventional displacement landing craft and LCACs. An LSD 41 cargo variant (CV) is being designed. The LSD 41 (CV) is conceptualized as an LSD 41 basic hull, optimized for cargo.

PROCUREMENT PROFILE: PRIOR FY-87 FY-88 FY-89 FY-90 FY-91 FY-92

Quantity

LSD 41	8	-	-	-	-	-	-
LSD 41 (CV)	-	-	1	-	1	1	2

WHY IS IT IMPORTANT? In 1967 there were 162 active amphibious ships. Today there are 63 total--including both active and reserve ships. The remaining three "Thomaston" (LSD 28) class ships will retire between 1987-1990. The LSD 41 construction program will replace the lost lift capacity attributed to the LSD 28 class retirements. Procurement of the LSD 41 (CV) class of ships to provide required lift for a MAF(AE) and a MAB(AE), particularly in cargo and LCAC carrying capacity, is essential.

PROGRAM STATUS: LSD 41 (USS "Whidbey Island") and LSD 42 (USS "Germantown") have been delivered. LSDs 43 through 48 are under contract/under construction. Contract design is in progress for the cargo variant; the contract award for LSD 49 is expected in April 1987.

DEVELOPER/MANUFACTURER: Lockheed Shipbuilding, Seattle, Washington  
Avondale Shipyards, New Orleans, Louisiana

### LANDING CRAFT AIR CUSHION (LCAC)

DESCRIPTION: The LCAC is a high-speed (40+ knots), over-the-beach, ship-to-shore amphibious landing vehicle capable of a 60-ton payload (75-ton overload). It is designed to lift all equipment organic to the MAGTF in an amphibious operation.

<u>PROCUREMENT PROFILE:</u>	<u>PRIOR</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>	<u>FY-92</u>
Quantity	33	-	-	9	12	12	12

WHY IS IT IMPORTANT? This air cushion vehicle will replace current pre-WWII technology landing craft, scheduled for retirement during the late 1990s, with modern landing craft that offer the following advantages over current landing craft:

- Expose 70 percent of the world's beaches to amphibious operations vice the current 17 percent.
- Travel in excess of 40 knots, vice 9-11 knots.
- Craft characteristics provide OTH launch capability and decrease vulnerability of the force.
- Increase survivability in mined waters.
- Significantly increase build-up rate ashore, thus increasing probability of assault success.

Six LCACs are the minimum needed to provide an operational capability for a MAU. A MAB requires 25 and a MAF notionally requires 65. Since the LCAC introduces the most significant improvement to amphibious warfare since the helicopter, LCAC procurement is strongly supported by the Marine Corps.

PROGRAM STATUS: Eighteen LCACs have been delivered or are under contract (including 2 under option). Contracts for the remaining 15 FY 85-86 LCACs are expected after successful completion of Operational Test IIIB scheduled for April 1987. The first operational LCAC unit, Assault Craft Unit Five, is located at Camp Pendleton. The second unit, Assault Craft Unit Four, is currently training at Panama City, Florida and will stand up at Little Creek, Virginia, in late CY-87.

DEVELOPER/MANUFACTURER: Textron Marine Systems  
Lockheed Shipbuilding



### Naval Surface Fire Support (NSFS)

While evolving concepts for the conduct of the amphibious assault will exploit the capabilities of the MV-22A Osprey and LCAC to land forces in relatively unopposed areas from OTH wherever and whenever possible, circumstances may still require assaults against defended beaches and landing zones. Moreover, the landing force once ashore in the objective area must be prepared to face the type of violent counterattacks using highly mobile, mechanized forces that the projected threat espouses. This not only validates the continued requirement for NSFS to provide the responsive, close and continuous all-weather fire support required during the first 24 hours until artillery is established ashore but, given the requirement to support helicopterborne assault forces landed 15-20 nm inland, also establishes the range requirement for modern NSFS systems at 60 nm (allowing also for ship standoff distance). Reactivation of the four Iowa-Class battleships has helped, but the bottom line is that the current inventory of NSFS platforms is deficient in range and lethality due to heavy dependence on 5-inch guns and the lack of the ability to kill hard, point targets without an excessive expenditure of ammunition.

In light of the foregoing, the Marine Corps supports the following enhancements to NSFS capabilities:

- Early introduction of 16-inch improvements that include a shipboard gunfire control system for greater accuracy and an extended range submunition projectile to provide greater range and a dramatic increase in lethality.
- The 5-inch semi-active laser-guided projectile (SAL-GP), when affordable, to provide the pinpoint accuracy needed to engage hard, point targets whether mobile or stationary.
- Procurement and stockage of sufficient NSFS ammunition to support the amphibious operations of a MAF and a MAB for 60 days.

The Marine Corps also supports the conclusions of the recently completed follow-on to the 1985 Naval Gunfire Support Improvement Study directed by the Congress, which addressed future requirements by recommending:

- Evaluation of the Army's Multiple Launch Rocket System (MLRS) for use at sea.
- Development of follow-on payloads.
- Development of an 8-inch gun system to combine with the rocket system as a replacement for the 16-inch gun when the battleships are eventually retired.

## NAVY SUPPORT ELEMENT (NSE)

DESCRIPTION: The NSE performs tasks to support amphibious and MPS operations in addition to those accomplished by the crews of amphibious ships. Since these units are not permanently assigned to the ships, they occupy berthing, vehicle, and cargo space designated for troops. The total lift requirement for an amphibious operation must therefore include NSE requirements as well as the MAGTF. The NSE, which will be split between the AE and the AFOE is composed of the following:

Commander Amphibious Task Force (CATF) Staff  
Naval Beach Group  
    Beach Group  
    Amphibious Construction Battalion  
    Assault Craft Unit  
SFALS  
    Explosive Ordnance Disposal (EOD) Unit  
    Medical Augmentation Unit  
    Mine Countermeasures Group  
    Navy Mobile Construction Battalion (NMCB)  
    Fleet Composite Readiness Group (FLTCORGRU)  
    Search and Rescue (SAR) Unit  
    Mobile Inshore Undersea Warfare (MIUW) Unit  
    Navy Cargo Handling and Port Group (NAVCHAPGRU)

WHY IS IT IMPORTANT? The NSE is vital to the smooth off-load of the amphibious force. Made up of widely diversified units, the principal challenge involved in the NSE is the manning and training of the NAVCHAPGRU, which is instrumental in operating the off-load systems of MPS/AFOE ships, and of the Naval Beach Group Units, who operate assault craft and lighterage for off-load of AE ships and control the flow of material on the beach to the high water mark.

PROGRAM STATUS: The Marine Corps supports the ability to simultaneously deploy two MPS MABs and two amphibious task forces. The Navy is programming to meet this goal using a preponderance of reserve forces in the NAVCHAPGRU and amphibious construction battalion.

### Medical Support

The timely provision of adequate wartime medical support to the FMF requires a wide range of expeditionary medical facilities. These facilities must be maintained at a high level of readiness in terms of trained manpower and logistics preparations. As a force-in-readiness, the FMF's mission to respond to global contingencies dictates that medical support facilities must be mobile and capable of rapid expansion with MAGTF buildup. Medical support assets should be sufficient overall to support three active MAFs while retaining the capability to be sized and packaged for employment with task organized MAGTFs. The structure of medical support must include rapidly deployable afloat facilities capable of providing support immediately upon arrival in the AOA.

Each MAF must have the assets to care for 20,000 casualties. Accordingly, state of the art medical equipment has been added to the inventories, and medical personnel manning levels have been programmed to improve readiness. The first of two hospital ships, the USNS "Mercy", has been delivered and will depart for the Philippines on a humanitarian mission in March 1987. Subsequently, she will enter the Reserve Fleet on the west coast in a 5 day recall status (ROS-5). The second ship, USNS "Comfort", will become operational in late 1987. She will also be maintained in ROS-5 status but will be located on the east coast. Both these ships have 1,000 beds and 12 operating rooms. Finally, by 1991, the Navy will reach the programmed goal of 11,250 hospital beds in 13 combat zone (CBTZ) fleet hospitals and 8 communication zone (COMMZ) fleet hospitals. Medical support fleet hospitals as programmed represent a significant improvement over previous capabilities.



## NAVY FLEET HOSPITALS

DESCRIPTION: Fleet hospitals are modular, rapidly erectable, relocatable medical facilities for treatment of both Navy and Marine Corps wounded. This Navy program provides both CBTZ and COMMZ facilities of varying sizes for a balance of mobility, flexibility and levels of care. Fleet hospitals will receive patients from amphibious task force ships, directly from medical units organic to Marine forces and from hospital ships. Fleet hospitals can be staged in CONUS or prepositioned either afloat or overseas in advance of hostilities. The total program calls for 21 hospitals. The first 2,500 beds (four 500-bed and two 250-bed CBTZ hospitals) will be delivered during FY-87.

WHY IS IT IMPORTANT? Rapidly deployable fleet hospitals will provide timely treatment in-theater to save lives, reduce disease, and maximize returns to duty. Like hospital ships and medical battalions, they are an integral part of the naval theater medical support structure and continuum of care. All elements of the continuum are needed to sustain combat operations.

PROGRAM STATUS: This program is on schedule.

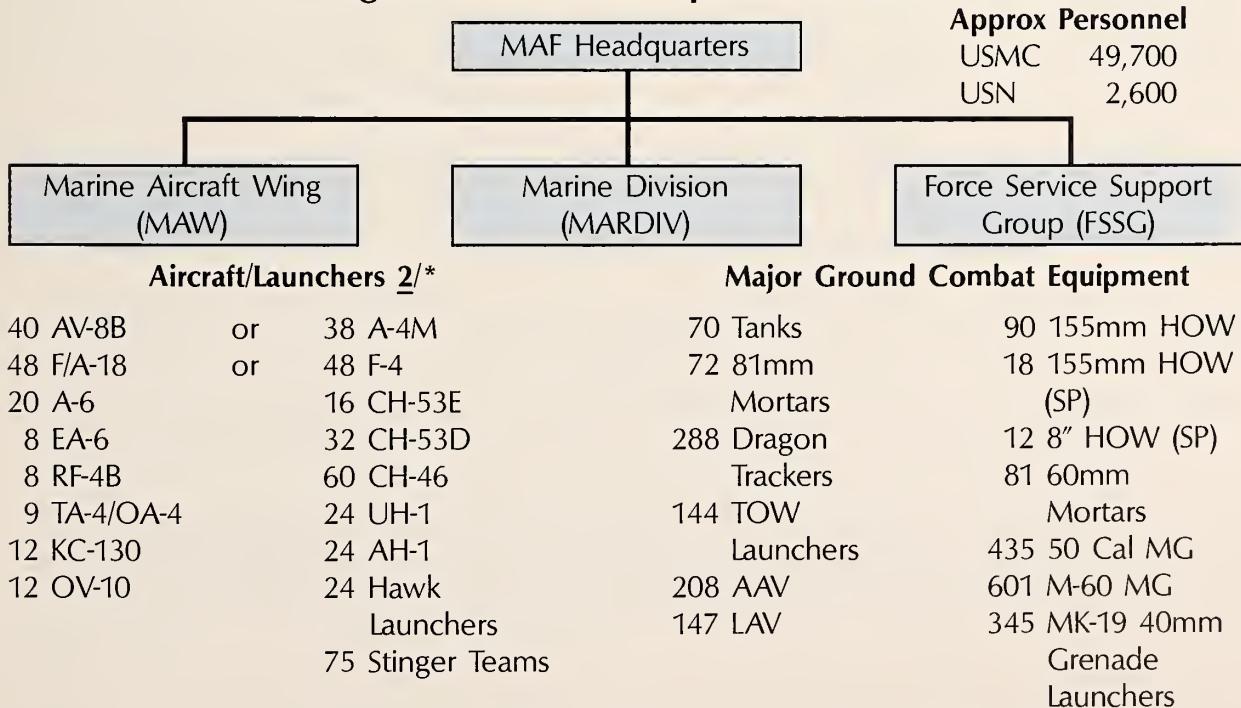
## APPENDIX A

### Marine Corps Tactical Force Organization

FMFs are comprised of ground, air, and CSS units that are routinely task organized into Marine Corps Air-Ground Task Forces (MAGTFs) for operations. Marine Corps doctrine provides that FMFs will be employed as integrated air-ground task forces tailored to accomplish specific missions. Regardless of the size of the MAGTF, it will include four major components: CE, GCE, ACE and CSSE.

There are three basic types of MAGTFs. The MAF is the largest of the MAGTFs, and is normally built around a division/wing team. However, it may range in size from less than a complete division/wing team up to several divisions and aircraft wings, together with an appropriate combat service support organization. The MAF is commanded by either a major general or a lieutenant general, depending on its size and mission. It is capable of conducting the full range of amphibious operations and sustained operations ashore, and can be tailored for a wide variety of combat missions in any geographic environment. A MAF is deployed in three stages. The first and largest is the AE. With the arrival of the AFOE and the FIE the MAF, consisting of over 52,000 Marines and Sailors, is complete. A notional task organization for the MAF is displayed in Figure A-1. 1/\*

**Figure A-1: Marine Amphibious Force**

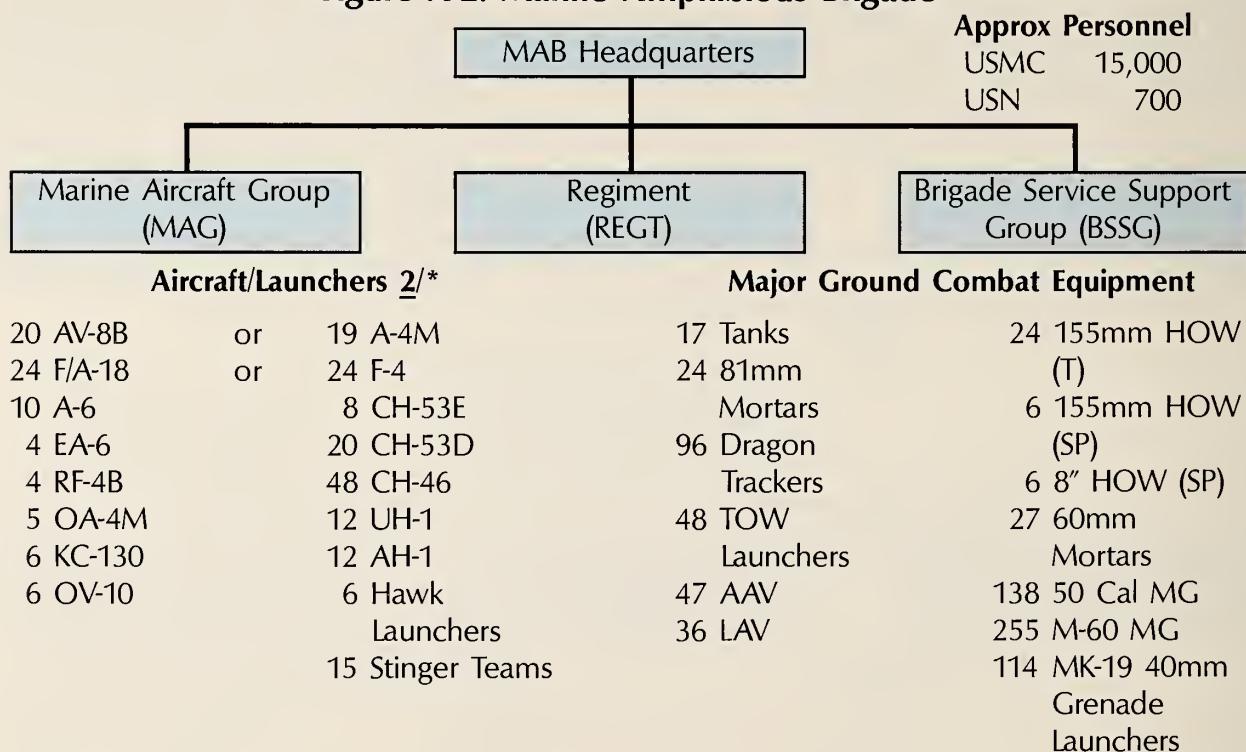


1/\* Actual task organization formed to accomplish specific missions may vary from the organization shown.

2/\* The Aviation Force shown equals approximately 1/3 of the total active aviation force assets. This force is not ideal (for example: 72 attack helicopters are the recognized minimum to properly support a MAF).

The MAB is the second largest type of MAGTF and is a task organization which is normally built around a reinforced infantry regiment and a composite Marine aircraft group. It is normally commanded by a brigadier general and is capable of conducting all types of amphibious operations. During potential crisis situations, a MAB may be forward deployed afloat for an extended period to provide immediate response and may serve as the precursor of a larger force. Under these conditions, MAB combat operations ashore may be supported from the sea base facilities of the Navy's amphibious ships. The MAB is deployed in three stages like a MAF. Most of the combat capability and Marine personnel are included in the AE. A notional task organization for a MAB is displayed in Figure A-2. 1/\*

**Figure A-2: Marine Amphibious Brigade**



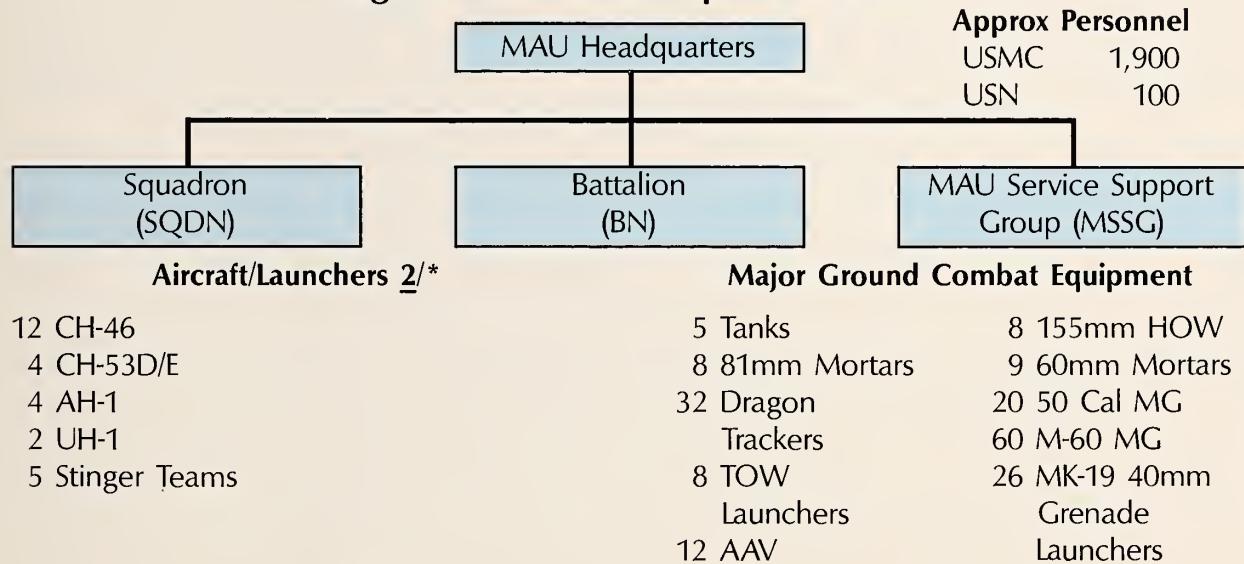
1/\* Actual task organization formed to accomplish specific missions may vary from the organization shown.

2/\* The Aviation Force shown, when added to an MPS Force List, equals approximately 1/3 of the total active aviation force assets. This force is not ideal (for example: 24 attack helicopters are the recognized minimum to properly support a MAB).

The MAU is a task organization which is normally built around a reinforced infantry battalion and a composite helicopter squadron. It is normally commanded by a colonel and employed to fulfill routine, forward-afloat deployment requirements. The MAU provides an immediate reaction capability to crisis situations and is capable of relatively limited combat operations. Because of its comparatively limited sustainability, it is not envisioned that a MAU will routinely conduct amphibious assaults. When committed ashore,

a MAU is normally supported from its sea base. A MAU is considered to be the forward afloat deployed element of a larger landing force, which would be constituted as required from CONUS or forward based combat ready FMFs. A notional task organization for a MAU is displayed in Figure A-3. 1/\*

**Figure A-3: Marine Amphibious Unit**



1/\* Actual task organization formed to accomplish specific missions may vary from the organization shown.

2/\* The ACE could be reinforced by 1 VMA DET (6 AV-8) as the tactical situation dictates.

The MAGTF is a tailored, combined arms organization. Separate employment of MAGTF elements under another command structure is contrary to Marine Corps policy. To do so is to fragment combat power, cause tactical and logistical supportability to become questionable, and to reduce overall combat effectiveness.

MAGTFs organized for amphibious operations deploy as the landing force aboard amphibious task force shipping. MAGTFs are also deployed for rapid response or reinforcing roles by means of tactical or strategic air or sealift. MAGTFs may be formed and deployed for combat, contingency deployments, and training exercises, and may be committed to combat from contingency deployments.



## APPENDIX B

### Glossary

AAV	ASSAULT AMPHIBIOUS VEHICLE
AAWS-M	ADVANCED ANTITANK WEAPON SYSTEM-MEDIUM
ABFC	ADVANCE BASE FUNCTIONAL COMPONENT
ACE	AVIATION COMBAT ELEMENT
ACM	AIR COMBAT MANEUVERING
ACMC	ASSISTANT COMMANDANT OF THE MARINE CORPS
ACMCC	ACMC COMMITTEE
ACP	AIRBORNE COLLECTION PLATFORM
ADAM	AREA DENIAL ARTILLERY MUNITION
ADP	AUTOMATED DATA PROCESSING
ADSU	AIR DELIVERED STORAGE UNIT
AE	ASSAULT ECHELON
AFOE	ASSAULT FOLLOW-ON ECHELON
AFQT	ARMED FORCES QUALIFICATION TEST
AGES	AIR GROUND ENGAGEMENT SYSTEM
AIS	AUTOMATED INFORMATION SYSTEM
AMASS	ADVANCED MARINE AIRBORNE SIGNALS INTELLIGENCE SYSTEM
ANGLICO	AIR/NAVAL GUNFIRE LIAISON COMPANY
ANVIS	AVIATOR'S NIGHT VISION IMAGING SYSTEM
AOA	AMPHIBIOUS OBJECTIVE AREA
APFSDS-T	ARMOR PIERCING FIRE STABILIZED DISCARDING SABOT-TRACER
APN	AIRCRAFT PROCUREMENT, NAVY
APPN	APPROPRIATION
APTS	ANALOG PRINTED TEST SET
ARBS	ANGLE RATE BOMBING SYSTEM
ARMS	AUTOMATED RECRUIT MANAGEMENT SYSTEM
ASIP	ALL SOURCE IMAGERY PROCESSOR
ASW	ANTISUBMARINE WARFARE
ATACC	ADVANCED TACTICAL AIR COMMAND CENTRAL
ATD	ADDITIONAL TEMPORARY DUTY
AVLB	ARMORED VEHICLE LAUNCHED BRIDGE
AVN	AVIATION
BCS	BATTERY COMPUTER SYSTEM
BEQ	BACHELOR ENLISTED QUARTERS
BLT	BATTALION LANDING TEAM
C <sup>4</sup>	COMMAND, CONTROL, COMMUNICATIONS AND COMPUTER SYSTEMS
CAEMS	COMPUTER AIDED EMBARKATION MANAGEMENT SYSTEM
CAL	CALIBER
CAMPS	COMPUTER-ASSISTED MISSION PLANNING SYSTEM
CASAT	COMPUTER-ASSISTED SYSTEMS APPROACH TO TRAINING
CAST	COMBINED ARMS STAFF TRAINER
CATF	COMMANDER AMPHIBIOUS TASK FORCE
CAX	COMBINED ARMS EXERCISE
CBTZ	COMBAT ZONE
COO	COMMUNICATIONS COLLECTION OUTSTATION
CCS	COUNTERINTELLIGENCE COMMUNICATIONS SYSTEM
CCU	COCKPIT CONTROL UNIT
CE	COMMAND ELEMENT
CEP	CIRCULAR ERROR PROBABLE
CG	COMMANDING GENERAL

CHAP	CONTAINER HANDLER, ALL PURPOSE
CHG PROP WB	CHARGE PROPELLENT WHITE BAG
CI	COUNTERINTELLIGENCE
CIEP	COUNTERINTELLIGENCE EQUIPMENT PROGRAM
CINC	COMMANDER-IN-CHIEF
CINCLANTFLT	COMMANDER-IN-CHIEF ATLANTIC FLEET
CINCPACFLT	COMMANDER-IN-CHIEF PACIFIC FLEET
CI&SE	COUNTERINTELLIGENCE AND SECURITY EQUIPMENT
CIT	COUNTERINTELLIGENCE TEAM
CMC	COMMANDANT OF THE MARINE CORPS
CNET	CHIEF OF NAVAL EDUCATION AND TRAINING
COMINT	COMMUNICATIONS INTELLIGENCE
COMMZ	COMMUNICATION ZONE
COMSEC	COMMUNICATIONS SECURITY
CONUS	CONTINENTAL UNITED STATES
CP	COMMAND POST
CRAF	CIVIL RESERVE AIR FLEET
CSP	CONTINGENCY SUPPORT PACKAGE
CSSE	COMBAT SERVICE SUPPORT ELEMENT
CUDIX	COMMON USER DIGITAL EXCHANGE
CV	CARGO VARIANT
CVBG	CARRIER BATTLE GROUP
CY	CALENDAR YEAR
DAMA	DEMAND ASSIGNED MULTIPLE ACCESS
DASC	DIRECT AIR SUPPORT CENTER
DCS	DEFENSE COMMUNICATIONS SYSTEM
DC/S	DEPUTY CHIEF OF STAFF
DCT	DIGITAL COMMUNICATIONS TERMINAL
DECM	DEFENSIVE ELECTRONIC COUNTER MEASURES
DEP	DELAYED ENTRY PROGRAM
DF	DIRECTION FINDING
DG	DEFENSE GUIDANCE
DI	DRILL INSTRUCTOR
DMA	DEPOT MAINTENANCE ACTIVITY
DOD	DEPARTMENT OF DEFENSE
DON	DEPARTMENT OF THE NAVY
DT	DEVELOPMENTAL TEST
DTDMA	DISTRIBUTED TIME DIVISION MULTIPLE ACCESS
ECOM	ELECTRONIC COUNTER-COUNTERMEASURES
ECM	ELECTRONIC COUNTERMEASURES
ECO	ELINT COLLECTION OUTSTATION
ELINT	ELECTRONIC INTELLIGENCE
EMC	ELECTRONIC MAINTENANCE COMPLEX
EO	ELECTRO-OPTICAL
EOD	EXPLOSIVE ORDNANCE DISPOSAL
ESS	ELECTRONIC INTELLIGENCE (ELINT) SUPPORT SYSTEM
EUCE	END USER COMPUTING EQUIPMENT
EW	ELECTRONIC WARFARE
EWSM	ELECTRONIC WARFARE SUPPORT MEASURES
FAAD	FORWARD AREA AIR DEFENSE
FDC	FIRE DIRECTION CENTER
FHN&MC	FAMILY HOUSING, NAVY AND MARINE CORPS
FIE	FLY-IN ECHELON
FLIR	FORWARD LOOKING INFRARED

FLS	FIELD LOGISTICS SYSTEM
FLTCORGRU	FLEET COMPOSITE READINESS GROUP
FLTSAT	FLEET SATELLITE
FM	FREQUENCY MODULATION
FMF	FLEET MARINE FORCE
FMFLANT	FLEET MARINE FORCE, ATLANTIC
FMFPAC	FLEET MARINE FORCE, PACIFIC
FSD	FULL SCALE DEVELOPMENT
FSED	FULL SCALE ENGINEERING DEVELOPMENT
FSSG	FORCE SERVICE SUPPORT GROUP
FTS	FULL-TIME SUPPORT
FY	FISCAL YEAR
FYDP	FIVE YEAR DEFENSE PROGRAM
GCE	GROUND COMBAT ELEMENT
GCS	GROUND CONTROL STATION
GP	GENERAL PURPOSE
GPETE	GENERAL PURPOSE ELECTRONIC TEST EQUIPMENT
GPH	GALLONS PER HOUR
GPS	GLOBAL POSITIONING SYSTEM
GSA-IDSF	GENERAL SERVICES ADMINISTRATION-INTERAGENCY DATA SYSTEMS FACILITY
GSRS	GENERAL SUPPORT ROCKET SYSTEM
GTRS	GROUND THREAT RADAR SIMULATOR
HARM	HOMING ANTIIRRADIATION MISSILE
HAW	HEAVY ANTIARMOR WEAPON
HEAA	HIGH EXPLOSIVE ANTIARMOR
HEAT	HIGH EXPLOSIVE ANTITANK
HEAT-MP-T	HEAT-MULTI-PURPOSE-TRACER
HEDP	HIGH EXPLOSIVE, DUAL PURPOSE
HEMTT	HEAVY EXPANDED MOBILITY TACTICAL TRUCK
HESU	HAND EMPLACED STORAGE UNIT
HET	HEAVY EQUIPMENT TRANSPORTER
HFCC	HIGH FREQUENCY COMMUNICATIONS CENTRAL
HMMWV	HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE
HOW	HOWITZER
HP	HORSEPOWER
HQ	HAVE QUICK
HQMC	HEADQUARTERS MARINE CORPS
HUMINT	HUMAN INTELLIGENCE
IAC	INTELLIGENCE ANALYSIS CENTER
ICM	IMPROVED CONVENTIONAL MUNITIONS
IDASC	IMPROVED DIRECT AIR SUPPORT CENTRAL
IFF	IDENTIFICATION FRIEND OR FOE
I&L	INSTALLATIONS AND LOGISTICS
ILLUM	ILLUMINATION
IMA	INTERMEDIATE MAINTENANCE ACTIVITY
IMC	INTEGRATED MANEUVER CONTROLLER
IMINT	IMAGERY INTELLIGENCE
IMS	INSTRUCTIONAL MANAGEMENT SYSTEM
INTEL	INTELLIGENCE
IOC	INITIAL OPERATING CAPABILITY
IR	INFRARED
IRR	INDIVIDUAL READY RESERVE
ISD	INSTRUCTIONAL SYSTEMS DEVELOPMENT
ISIS	INTEGRATED SIGNALS INTELLIGENCE SYSTEM

ISO	INTERNATIONAL STANDARDIZATION ORGANIZATION
ISP	INFORMATION STRATEGY PLAN
ITS	INDIVIDUAL TRAINING STANDARD
IU	INTERROGATION UNIT
JCS	JOINT CHIEFS OF STAFF
JINTACCS	JOINT INTEROPERABILITY TACTICAL COMMAND AND CONTROL SYSTEM
JTIDS	JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM
JUMPS/MMS	JOINT UNIFORM MILITARY PAY SYSTEM/MANPOWER MANAGEMENT SYSTEM
KE	KINETIC ENERGY
KHZ	KILOHERTZ
LAAD	LOW ALTITUDE AIR DEFENSE
LAAM	LIGHT ANTIAIRCRAFT MISSILE
LAW	LIGHT ANTIARMOR WEAPON
LACH	LIGHTWEIGHT AMPHIBIOUS CONTAINER HANDLER
LAV	LIGHT ARMORED VEHICLE
LEWDD	LIGHTWEIGHT EARLY WARNING DETECTION DEVICE
LCAC	LANDING CRAFT AIR CUSHION
LEASAT	LEASED SATELLITE
LHD	AMPHIBIOUS ASSAULT SHIP (MULTI-PURPOSE)
LLI	LONG LEAD ITEM
LOB	LINE-OF-BEARING
LSD	DOCK LANDING SHIP
LVS	LOGISTICS VEHICLE SYSTEM
LWCMS	LIGHT WEIGHT COMPANY MORTAR SYSTEM
MAB	MARINE AMPHIBIOUS BRIGADE
MAF	MARINE AMPHIBIOUS FORCE
MAG	MARINE AIRCRAFT GROUP
MAGIS	MARINE AIR-GROUND INTELLIGENCE SYSTEM
MAGTF	MARINE AIR-GROUND TASK FORCE
MARDIV	MARINE DIVISION
MASC	MAGTF AUTOMATED SERVICES CENTER
MAU	MARINE AMPHIBIOUS UNIT
MAU(SOC)	MARINE AMPHIBIOUS UNIT (SPECIAL OPERATIONS CAPABLE)
MAW	MARINE AIR WING
MAWTS-1	MARINE AVIATION WEAPONS AND TACTICS SQUADRON-ONE
MBT	MAIN BATTLE TANK
MCAGCC	MARINE CORPS AIR-GROUND COMBAT CENTER (TWENTY-NINE PALMS, CA)
MCAS	MARINE CORPS AIR STATION
MCATES	MARINE CORPS AUTOMATED TEST EQUIPMENT SYSTEM
MCB	MARINE CORPS BASE
MCCDPA	MARINE CORPS CENTRAL DESIGN AND PROGRAMMING ACTIVITY
MCDEC	MARINE CORPS DEVELOPMENT AND EDUCATION COMMAND
MCESS	MARINE CORPS EXPEDITIONARY SHELTER SYSTEM
MCLB	MARINE CORPS LOGISTICS BASE
MCMWTC	MARINE CORPS MOUNTAIN WARFARE TRAINING CENTER (PICKEL MEADOWS, CA)
MCON	MILITARY CONSTRUCTION,
MCNR	MILITARY CONSTRUCTION, NAVY RESERVE
MCSF	MARINE CORPS STOCK FUND
MEC	MINIMUM ESSENTIAL CAPABILITY
MEWSS	MOBILE ELECTRONIC WARFARE SUPPORT SYSTEM
MG	MACHINE GUN
MGB	MEDIUM GIRDER BRIDGE
MHZ	MEGAHERTZ

MIFASS	MARINE INTEGRATED FIRE AND AIR SUPPORT SYSTEM
MILES	MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM
MIUW	MOBILE INSHORE UNDERSEA WARFARE
MLRP	MARINE CORPS LONG RANGE PLAN
MM	MILLIMETER
MMROP	MARINE CORPS MID-RANGE OBJECTIVES PLAN
MORDT	MOBILIZATION OPERATIONAL READINESS DEPLOYMENT TEST
MOS	MILITARY OCCUPATIONAL SPECIALITY
MOUT	MILITARY OPERATIONS IN URBAN TERRAIN
MPF	MARITIME PREPOSITIONING FORCE
MPMC	MILITARY PERSONNEL, MARINE CORPS
MPN	MILITARY PERSONNEL, NAVY
MPR	MANPOWER
MPS	MARITIME PREPOSITIONING SHIPS
MSC	MILITARY SEALIFT COMMAND
MTO	MID-TERM OBJECTIVE
MTS	MOVING TARGET SIMULATOR
MU	MEMORY UNIT
MULE	MODULAR UNIVERSAL LASER EQUIPMENT
NATO	NORTH ATLANTIC TREATY ORGANIZATION
NAVCOMPT	COMPTROLLER OF THE NAVY
NAVCHAPGRU	NAVY CARGO HANDLING AND PORT GROUP
NAVMACS	NAVAL MODULAR AUTOMATED COMMUNICATIONS SUB-SYSTEM
NBC	NUCLEAR, BIOLOGICAL AND CHEMICAL
NCA	NATIONAL COMMAND AUTHORITY
NDI	NON-DEVELOPMENTAL ITEM
NDRF	NATIONAL DEFENSE RESERVE FLEET
NETPMSA	NAVAL EDUCATION AND TRAINING PROGRAM MANAGEMENT SYSTEMS ACTIVITY
NM	NAUTICAL MILE
NMCB	NAVY MOBILE CONSTRUCTION BATTALION
NOSC	NAVAL OCEAN SYSTEMS CENTER
NSA	NATIONAL SECURITY AGENCY
NSE	NAVY SUPPORT ELEMENT
NSF	NAVY STOCK FUND
NSFS	NAVAL SURFACE FIRE SUPPORT
NTPF	NEAR TERM PREPOSITIONING FORCE
NTS	NAVAL TELECOMMUNICATIONS SYSTEM
O&MMC	OPERATION AND MAINTENANCE, MARINE CORPS
O&MMCR	OPERATION AND MAINTENANCE, MARINE CORPS RESERVE
O&MN	OPERATION AND MAINTENANCE, NAVY
O&MNR	OPERATION AND MAINTENANCE, NAVY RESERVE
OPN	OTHER PROCUREMENT, NAVY
OSD	OFFICE OF THE SECRETARY OF DEFENSE
OT	OPERATIONAL TESTING
OT&E	OPERATIONAL TEST AND EVALUATION
OTH	OVER THE HORIZON
PAA	PROGRAMMED AIRCRAFT AUTHORIZATION
PALCON	PALLET CONTAINER
PCG	PROGRAM COORDINATION GROUP
PCS	PORTABLE CONTROL STATION
PEI	PRINCIPAL END ITEM
PEO	PRINCIPAL EXECUTIVE OFFICER
PGTS	PRECISION GUNNERY TRAINING SYSTEM

PIP	PRODUCT IMPROVEMENT PROGRAM
PIU	PROCESSOR INTERFACE UNIT
PLRS	POSITION LOCATION REPORTING SYSTEM
PMC	PROCUREMENT, MARINE CORPS
POL	PETROLEUM, OIL AND LUBRICANTS
POM	PROGRAM OBJECTIVE MEMORANDUM
PPBS	PLANNING, PROGRAMMING AND BUDGETING SYSTEM
PP&O	PLANS, POLICIES AND OPERATIONS
PSI	POUNDS PER SQUARE INCH
PWG	POM WORKING GROUP
QOL	QUALITY OF LIFE
QUADCON	QUADRUPLE CONTAINER
R&D	RESEARCH AND DEVELOPMENT
RAP	ROCKET ASSISTED PROJECTILE
RAAM	REMOTE ANTIARMOR MINE
RAP	ROCKET ASSISTED PROJECTILE
RASC	REGIONAL AUTOMATED SERVICE CENTER
RB	RED BAG
R/DF	REPRODUCTION/DISTRIBUTION FACILITY
RDT&EN	RESEARCH, DEVELOPMENT, TEST AND EVALUATION NAVY
RETS	REMOTE ENGAGEMENT TARGET SYSTEM
RF	RADIO FREQUENCY
RHA	ROLLED HOMOGENEOUS ARMOR
RKT	ROCKET
RLT	REGIMENTAL LANDING TEAM
RO/RO	ROLL-ON/ROLL-OFF
ROWPU	REVERSE OSMOSIS WATER PURIFICATION UNIT
RPMC	RESERVE PERSONNEL, MARINE CORPS
RPN	RESERVE PERSONNEL, NAVY
RPPS	RETIRED PAY PERSONNEL SYSTEMS
RPV	REMOTELY PILOTED VEHICLE
RRF	READY RESERVE FLEET
RTCH	ROUGH TERRAIN CONTAINER HANDLER
RU	RECOVERY UNIT
SAAS	STAND ALONE ANALYSIS SYSTEM
SAL-GP	SEMIACTIVE, LASER-GUIDED PROJECTILE
SAR	SEARCH AND RESCUE
SARTS	SMALL ARMS REMOTE TARGETS
SAT	SYSTEMS APPROACH TO TRAINING
SAU	SELECTED AUGMENTATION UNIT
SAW	SQUAD AUTOMATIC WEAPON
SCN	SHIPBUILDING AND CONVERSION, NAVY
SE	SUPPORTING ESTABLISHMENT
SEAL	SEA-AIR-LAND
SECNAV	SECRETARY OF THE NAVY
SEE	SMALL EMPLOYMENT EXCAVATOR
SHF	SUPER HIGH FREQUENCY
SIGINT	SIGNALS INTELLIGENCE
SINCGARS	SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM
SIXCONS	FUEL/WATER STORAGE AND PUMP MODULES
SLAR	SIDE LOOKING AIRBORNE RADAR
SLEP	SERVICE LIFE EXTENSION PROGRAM
SLOC	SEA LINES OF COMMUNICATION
SLT	SIMULATED LASER TARGETS

SMAW	SHOULDER-LAUNCHED MULTIPURPOSE ASSAULT WEAPON
SMCR	SELECTED MARINE CORPS RESERVE
SMK	SMOKE
SP	SELF PROPELLED
SRB	SELECTIVE REENLISTMENT BONUS
SRP	SEALIFT READINESS PROGRAM
STA	SURVEILLANCE AND TARGET ACQUISITION
TACAIR	TACTICAL AIR
TACC	TACTICAL AIR COMMAND CENTER
TACDM	TACTICAL DECISION MAKING
TAOM	TACTICAL AIR OPERATIONS MODULE
TADIL-J	TACTICAL DIGITAL INFORMATION LINK-J
TAVB	AVIATION LOGISTICS SUPPORT SHIP
TBD	TO BE DETERMINED
TCAC	TECHNICAL CONTROL AND ANALYSIS CENTER
TCC	TACTICAL COMMUNICATIONS CENTER
TCO	TACTICAL COMBAT OPERATIONS
TDAR	TACTICAL DEFENSE ALERT RADAR
TDMA	TIME DIVISION MULTIPLE ACCESS
T/E	TABLE OF EQUIPMENT
TENCAP	TACTICAL EXPLOITATION OF NATIONAL CAPABILITIES
TERPES	TACTICAL ELECTRONIC RECONNAISSANCE PROCESSING AND EVALUATION SYSTEM
TFS	TACTICAL FUEL SYSTEM
TIMS	TRAINING INFORMATION MANAGEMENT SYSTEM
TLB	TRAILER LAUNCHED BRIDGE
TOA	TOTAL OBLIGATIONAL AUTHORITY
TPCS	TEAM PORTABLE COMMUNICATIONS INTELLIGENCE SYSTEM
TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
TPS	TEST PROGRAM SET
TP-T	TARGET PRACTICE-TRACER
TPSDS	TEST PROGRAM SET DEVELOPMENT SYSTEM
TRI-TAC	JOINT TACTICAL COMMUNICATIONS OFFICE
TRNG	TRAINING
TRRMS	TRAINING REQUIREMENTS AND RESOURCE MANAGEMENT SYSTEM
TRSS	TACTICAL REMOTE SENSOR SYSTEM
TSCM	TECHNICAL SURVEILLANCE COUNTERMEASURES
TWSEAS	TACTICAL WARFARE SIMULATION, EVALUATION AND ANALYSIS SYSTEM
TWSEAS-IMC	TWSEAS - INTEGRATED MANEUVER CONTROLLER
UDP	UNIT DEPLOYMENT PROGRAM
UHF	ULTRA HIGH FREQUENCY
ULCS	UNIT LEVEL CIRCUIT SWITCH
ULS	UNIT LEVEL SWITCH
USA	UNITED STATES ARMY
VEAP	VETERAN'S EDUCATION ASSISTANCE PROGRAM
VHF	VERY HIGH FREQUENCY
VMADET	FIXED WING MARINE ATTACK DETACHMENT
VMFT-401	MARINE FIGHTER TRAINING SQUADRON-401
V/STOL	VERTICAL SHORT TAKE OFF AND LANDING
WB	WHITE BAG
WP	WHITE PHOSPHOROUS
WPN	WEAPONS PROCUREMENT, NAVY
WTI	WEAPONS AND TACTICS INSTRUCTOR



## APPENDIX C

### Current Capabilities

These current capability programs were described in the 1985 Concepts and Issues in detail. As the weapons and systems are substantially fielded, this current edition does not include detailed descriptions.

#### GROUND COMBAT

Shoulder-Launched Multipurpose Assault Weapon (SMAW)  
Light Armored Vehicle (LAV)  
Landing Vehicle Tracked LVT7A1  
Modular Universal Laser Equipment (MULE)  
M60E3 Lightweight 7.62mm Machine Gun  
M16A2 Rifle  
Battery Computer System (BCS)  
Armored Vehicle Launched Bridge (AVLB)  
M-198 155mm Howitzer

#### AVIATION

GAU 12/U 25mm Gun  
GATOR  
AN/TPS-59 Radar  
Contingency Support Package (CSP)  
10 day Fly-in "O" Level Support Packages

#### CSS

Marine Corps Expeditionary Shelter System (MCNESS)  
Intermediate Size Containers (Inserts, Palcons, and Quadcons)  
Medium Tactical Truck  
70-ton Heavy Equipment Transporter  
Crash/Fire/Rescue Vehicle (C/F/R)  
Lightweight Amphibious Container Handler (LACH)  
Rough Terrain Container Handler (RTCH)  
Wet and Dry Gap Bridging  
Tactical Steam Cleaner  
Tactical Fuel System  
Small Employment Excavator (SEE)

#### C4

Central Processing Unit (CPU) Augmentation Program  
Automated Data Processing Equipment for the Supporting Establishment  
(ADPE-SE)

#### INTEL

Intelligence Analysis Center (IAC)  
Forward Pass  
Team Portable Direction Finder (TPDF) PIP

#### NAVY

Strategic Sealift Requirements  
Maritime Prepositioning Ship  
Aviation Logistics Support Ship (TAVB)  
Advance Base Functional Components (ABFC)



## APPENDIX D

## Distribution

CG	FMFPAC	20
CG	FMFLANT	20
CG	FMFEUR Designate	10
CG	1ST MARDIV	30
CG	2D MARDIV	30
CG	3D MARDIV	30
CG	4TH MARDIV	30
CG	1ST MAW	30
CG	2D MAW	30
CG	3D MAW	30
CG	4TH MAW	30
CG	1ST FSSG	30
CG	2D FSSG	30
CG	3D FSSG	30
CG	4TH FSSG	30
CG	MCLB, Albany	10
CG	MCLB, Barstow	10
CG	1ST MAB	10
CG	2D MAB	10
CG	4TH MAB	10
CG	5TH MAB	10
CG	6TH MAB	10
CG	7TH MAB	10
CG	9TH MAB	10
CG	MCAGCC	10
CG	I MAF	10
CG	II MAF	10
CG	III MAF	10
CG	MCB CAMP PENDLETON	20
CG	MCB CAMP LEJEUNE	20
CG	MCDEC	200
MCOTEA		10
MCTSSA		10
MCFC		10
NROTC Schools		59
District Directors		6
Recruiting Stations		48
I&I		187
MC REPS/LNO (1 each)		120
HOMC		506

AVN	20	FD	10
MPR	20	HD	2
I&L	20	JAD	2
PP&O	20	C <sup>4</sup>	20
TRNG	10	CL	2
RD&S	10	MED	2
INT	10	PA	50
RESAFF	10	OLA	300

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